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LOUISIANA CHAPTER
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ORAL ABSTRACTS

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C'EST LEVEE, C'EST LA VIE: ARE GULF COAST TRAUMA CENTERS READY FOR RISING SEA LEVELS?

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Background: As sea-levels rise rapidly and unevenly, the Gulf South has been hurled to the frontline of climate change in the U.S. Coastal communities are increasingly at risk for flooding due to more frequent and severe precipitation and storm surges [1]. While many cities are working to assess their climate resilience, recent events have exposed vulnerabilities within the health system, as affected trauma centers face repeated disruption of services. Hospitals receiving refugees may be ill-prepared to compensate for trauma surges, as they may be operating at maximum capacity, servicing a disproportionate share of chronically ill and low-income patients, or lacking an adequate supply of resources [2,3]. Despite recognition of vulnerability, there remains a lack of research into how climate change can impact trauma systems. Anticipating effects on trauma care by coastal storms and floods in the Gulf South at projected sea level rise scenarios could help reduce the health burden from these events.

Objective: We aim to determine what trauma centers in the Gulf South are vulnerable in a range of sea-level rise in the context of climate change and coastal population health and to assess the degree to which levels of trauma care could be disrupted in extreme weather events.

Methods: We performed a geospatial analysis of Level I, II, and III trauma centers in the Gulf South to examine their sensitivity to varying flood scenarios using NOAA's Sea Level Rise Viewer [4]. Based on predictions from the IPCC, each center was evaluated at 0.6 m, 0.9 m, and 1.2 m to represent possible sea level rise around 2100 [1]. Centers were designated as unaffected (above flood level), below but isolated (high tide and weather event flooding), below water level (center or surrounding area underwater at baseline), and vulnerable (high Social Vulnerability Index). Data regarding Gulf South trauma centers was obtained using the 2019 ATS TIEP [5].

Results: We identified a total of 492 trauma centers located in the Gulf South (68 ACS verified, 476 state designated). Among state designated trauma centers, there were 43 Level I, 70 Level II, 124 Level III, and 255 Level IV trauma centers. Level IV trauma centers were excluded from additional analysis. We estimate that 4.7%, 9.6%, and 11.6% of Level I-III Gulf South trauma centers will be vulnerable to seawater rise according to 0.6 m, 0.9 m, and 1.2 m projections, respectively. The highest sea level rise projection resulted in potential loss of over 26.7% and 27.7% of ICU & floor beds, respectively. The average distance between affected trauma centers and the closest center of any level vs. equivalent level above the same water level was 81.2 vs. 108.7 km.

Conclusion: Rising sea levels and increased frequency of extreme weather events could restrict access to many trauma centers and limit the available hospital bed capacity. With this analysis, we hope to inform adaptation planning to enhance climate resilience of Gulf South trauma centers.

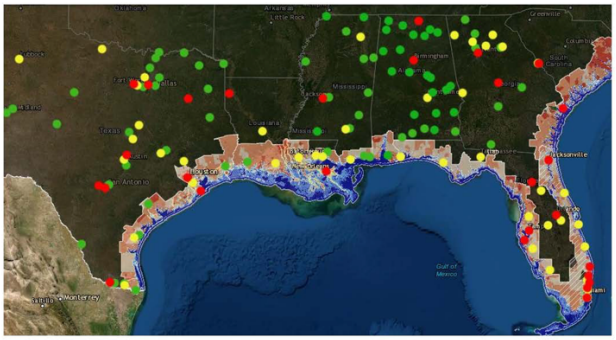

Figure 1. Geospatial map of the effects of sea level rise using the 1.2 m projection on Gulf South trauma centers. Trauma centers and their respective state designation level are depicted by colored circles (Red: Level 1; Yellow: Level 2; Green: Level 3). Sea level rise is depicted by shaded regions (Blue: Below water level; Lime Green: Below but isolated). Areas shaded in various red hues represent Social Vulnerability Index.

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Table 1. Estimates of the impacts of sea level rise on trauma centers according to level for each of the IPCC projections. Values are listed as n (%). Distance represents travel km to the next closest trauma center and next closest equivalent or greater trauma center above projected water level.

Projection	Low (0.6 m)		Moderate (0.91 m)		High (1.22 m)	
Impact	**Below but Isolated**	**Below Water Level**	**Below but Isolated**	**Below Water Level**	**Below but Isolated**	**Below Water Level**
All Levels (n=492)	23 (4.7%)	1 (0.2%)	47 (9.6%%)	2 (0.4%)	57 (11.6%)	16 (3.3%)
Hospital Beds (n=88445)	11210 (12.7%)	230 (0.3%)	22363 (25.3%)	842 (1.0%)	24448 (27.7%)	7593 (8.6%)
ICU Beds (n=1345)	220 (16.4%)	0 (0%)	325 (24.2%)	12 (0.9%)	359 (26.7%)	149 (11.1%)
Distance to Next Center, km		16.6 (n=1)		106.8 (n=2)		81.2 (n=16)
Distance to Next Equivalent Center, km		16.6 (n=1)		146.8 (n=2)		108.7 (n=16)
Level 1 (n=43)	8 (18.6%)	0 (0%)	12 (27.9%)	1 (2.3%)	14 (32.6%)	4 (9.3%)
Hospital Beds (n=29365)	6144 (20.9%)	0 (0%)	9362 (31.9%)	612 (2.1%)	9057 (30.1%)	2755 (9.4%)
ICU Beds (n=799)	132 (16.5%)	0 (0%)	183 (22.9%)	12 (1.5%)	142 (17.7%)	91 (11.4%)
Distance to Next Center, km				197 (n=1)		105.42 (n=5)
Distance to Next Equivalent Center, km				277 (n=1)		179.2 (n=5)
Level 2 (n=70)	7 (10.0%)	1 (1.4%)	17 (24.3%)	1 (1.4%)	15 (21.4%)	11 (15.7%)
Hospital Beds (n=30123)	2817 (9.4%)	230 (0.8%)	7512 (24.9%)	230 (0.8%)	7128 (23.7%)	4671 (15.5%)
ICU Beds (n=452)	72 (15.9%)	0 (0%)	108 (23.9%)	0 (0%)	83 (18.4%)	58 (12.8%)
Distance to Next, km		16.6 (n=1)		16.6 (n=1)		73.9 (n=9)
Distance to Next Equivalent Center, km		16.6 (n=1)		16.6 (n=1)		81.9 (n=9)
Level 3 (n=124)	8 (6.5%)	0 (0%)	18 (14.5%)	0 (0%)	28 (22.6%)	1 (0.8%)
Hospital Beds (n=28883)	2249 (7.8%)	0 (0%)	5489 (19.0%)	0 (0%)	8303 (28.8%)	167 (0.6%)
ICU Beds (n=94)	16 (17.0%)	0 (0.0%)	34 (36.2%)	0 (0%)	34 (26.2%)	0 (0%)
Distance to Next Center, km						89.8 (n=1)
Distance to Next Equivalent Center, km						89.8 (n=1)

HEPATIC VAGOTOMY IN OBESE PATIENTS LEADS TO IMPROVEMENT OF THE CHOLESTEROL TO HDL RATIO

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Background: Obesity is a worldwide epidemic that is growing at an alarming rate. Increased visceral adiposity is associated with numerous metabolic consequences which are modulated by peroxisome proliferator-activated receptor (PPAR) induced inter-organ signaling pathways. PPARs are ligand-activated transcription factors in the nuclear receptor superfamily that reduce blood pressure (BP) and arterial remodeling, decrease triglycerides (TG) and increase high-density lipoprotein (HDL) cholesterol, and improve insulin sensitivity. However, an obesity-induced inflammatory milieu can interfere with the beneficial effects of PPAR activity, suggesting that a dysregulated PPAR-vagus pathway may play a role in the pathogenesis of obesity-related hypertension.

Objective: Motivated by numerous animal studies demonstrating that PPAR knock-out and hepatic vagotomy independently block inflammation-induced hypertension, we hypothesized that hepatic vagotomy in obese human patients would result in significant differences in blood pressure reduction and/or the number of hypertension medications when compared to those whose hepatic branch of the vagus nerve (HBV) was spared.

Methods: We conducted a retrospective chart review of 160 severely obese patients undergoing laparoscopic sleeve gastrectomy. Patients were divided into two groups, hepatic vagotomy (HV) and control, based on clear documentation in the operative note of division or preservation of the HBV. Information was collected from each clinic visit, including initial consult, pre-operative clinic visit, and two weeks, six weeks, six months, and one-year post-operation.

Results: At six months post-operation, subjects in the HV group were found to have significantly lower total cholesterol/HDL ratios than those in the control group. The HV group also had a numerically better blood profile for total cholesterol, HDL, low-density lipoprotein (LDL), TG, C-reactive protein (CRP), and LDL/HDL ratio, though the observed differences were not significant. A subset analysis of patients with pre-operative systolic BP greater than 130 mmHg showed numerically lower HTN medication counts in the HV group at six weeks, six months, and one year, though differences between groups were not significant.

Conclusion: In conclusion, we present the first study to report clinically significant changes related to hepatic vagotomy in human subjects. Our results did not support our initial hypothesis, but did demonstrate an improvement of the total cholesterol/HDL ratio with HV in the severely obese patient. Future studies should confirm this finding with a randomized control trial and test for statistically significant differences in blood pressure reduction, number of hypertension medications, and cholesterol blood panels in either group.

Table 1. Demographic and clinical patients characteristics (N = 160).

Characteristics	n	Control (n = 93)	n	HV (n = 67)	p-value
Sex, % (n)					0.276
Female		88.2 (82)		94.0 (63)	
Male		11.8 (11)		6.0 (4)	
Consult					
Age (years), mean (SD)	93	41.9 (10.5)	67	39.4 (8.5)	0.107
BMI (kg/m^2), mean (SD)	93	51.6 (8.9)	66	48.7 (8.7)	0.042
SBP, (mmHg), mean (SD)	90	136.6 (14.9)	66	138.1 (13.5)	0.515
DBP, (mmHg), mean (SD)	90	83.6 (10.2)	66	86.0 (8.5)	0.127
A_1C, (), mean (SD)	91	6.2 (1.1)	66	6.0 (0.9)	0.182
Cholesterol, (), mean (SD)	91	170.5 (30.1)	66	172.3 (31.0)	0.720
HDL, (), mean (SD)	91	44.8 (10.1)	66	45.5 (10.2)	0.653
LDL, (), mean (SD)	91	98.4 (28.8)	66	100.1 (29.1)	0.720
TG, (), mean (SD)	91	137.2 (71.5)	66	131.5 (69.1)	0.619
CRP, (), mean (SD)	92	15.9 (10.4)	65	12.1 (9.1)	0.017
Cholesterol/HDL	91	3.9 (0.9)	66	3.9 (1.0)	0.924
LDL/HDL	91	2.3 (0.7)	66	2.3 (0.8)	0.786
Pre surgery					
BMI (kg/m^2), mean (SD)	93	50.7 (8.0)	67	47.8 (7.3)	0.020
SBP, (mmHg), mean (SD)	91	135.4 (16.9)	66	139.0 (14.6)	0.168
DBP, (mmHg), mean (SD)	91	83.0 (10.5)	66	84.9 (10.0)	0.260
HTN meds count, mean (SD)	93	1.3 (1.3)	67	0.8 (1.2)	0.017
DM meds count, mean (SD))	92	0.4 (0.7)	67	0.3 (0.6)	0.276

A_1C = ; BMI= ; DBP= ; HV = hepatic vagotomy; SBP= systolic blood pressure.

Table 2A: Overall post-operative patient-reported outcomes.

Outcome	Control (n = 93)	HV (n = 67)	Group	Time	Group*Time
			---------- p-value ----------		
BMI (kg/m^2), mean (SEM)	41.4 (0.3)	41.3 (0.4)	0.870	<0.0001	0.930
SBP, (mmHg) , mean (SEM)	128.0 (1.5)	127.4 (1.7)	0.714	0.311	0.376
DBP, (mmHg) , mean (SEM)	79.4 (1.2)	80.2 (1.4)	0.552	0.219	0.375
HTN meds count, mean (95% CI)	0.4 (0.3 – 0.7)	0.4 (0.2 – 0.6)	0.464	0.293	0.836
DM meds count, mean (95% CI)	0.1 (0.04 – 0.2)	0.1 (0.03 – 0.1)	0.656	0.324	0.937

*All values are least squares means covariate adjusted for gender, age, and pre-surgery values.
CI = confidence interval; HV = hepatic vagotomy; SEM = standard error of the mean.

Table 2B. Selected outcomes (N = 160).

Characteristics	n	Control (n = 93)	n	HV (n = 67)	p-value
2 weeks					
BMI (kg/m^2), mean (SEM)	91	45.7 (0.3)	65	45.5 (0.3)	0.530
SBP, (mmHg), mean (SEM)	92	129.5 (2.1)	63	126.8 (2.5)	0.253
DBP, (mmHg), mean (SEM)	92	81.4 (1.5)	63	82.1 (1.8)	0.664
6 weeks					
BMI (kg/m^2), mean (SEM)	81	43.3 (0.3)	61	43.4 (0.4)	0.761
SBP, (mmHg), mean (SEM)	77	126.7 (2.4)	58	126.4 (2.7)	0.890
DBP, (mmHg), mean (SEM)	77	77.7 (1.6)	58	79.3 (1.8)	0.327
HTN meds count, mean (95% CI)	81	0.6 (0.5 , 0.9)	61	0.5 (0.3 , 0.8)	0.287
DM meds count, mean (95% CI)	81	0.1 (0.04 , 0.2)	61	0.1 (0.02 , 0.2)	0.480
6 months					
BMI (kg/m^2), mean (SEM)	70	38.8 (0.5)	55	38.8 (0.5)	0.975
SBP, (mmHg), mean (SEM)	59	128.0 (2.3)	49	130.4 (2.5)	0.319
DBP, (mmHg), mean (SEM)	59	79.8 (2.1)	54	82.2 (2.3)	0.279
HTN meds count, mean (95% CI)	70	0.6 (0.4 , 1.0)	56	0.5 (0.3 , 0.8)	0.321
DM meds count, mean (95% CI)[1]	70	0.07 (0.03 , 0.2)	56	0.05 (0.01 , 0.2)	0.557
1 year					
BMI (kg/m^2), mean (SEM)	43	36.0 (1.0)	46	35.7 (1.0)	0.696
SBP, (mmHg), mean (SEM)	40	123.1 (3.5)	37	120.4 (3.4)	0.368
DBP, (mmHg), mean (SEM)	40	76.9 (3.3)	37	75.9 (3.3)	0.703
HTN meds count, mean (95% CI)	43	0.4 (0.2 , 0.9)	45	0.4 (0.2 , 0.8)	0.659
DM meds count, mean (95% CI)	43	0.2 (0.08 , 0.3)	45	0.1 (0.05 , 0.3)	0.629

[1]Adjusted for pre surgery value, sex and age.
HV = hepatic vagotomy.

Table 3. Labs at 6 months post surgery (N = 160).

Characteristics	n	Control (n = 93)	n	HV (n = 67)	p-value
Blood parameter					
A_1C	47	5.6 (0.1)	40	5.6 (0.1)	0.709
Cholesterol	47	164.8 (6.2)	38	157.7 (6.6)	0.237
HDL	47	45.7 (3.7)	38	51.8 (3.9)	0.091
LDL	46	105.8 (6.5)	38	97.7 (6.9)	0.192
TG	47	97.0 (14.0)	38	84.8 (15.2)	0.367
CRP	46	10.5 (2.3)	39	8.4 (2.4)	0.337
Cholesterol/HDL	47	3.8 (0.2)	38	3.3 (0.2)	0.017
LDL/HDL	46	2.4 (0.2)	38	2.1 (0.2)	0.068

[1]Adjusted for consult value, sex and age.
HV = hepatic vagotomy.

Table 4. Selected outcomes in patients with SBP preop >130 (N = 103).

Characteristics	n	Control (n = 57)	n	HV (n = 46)	p-value
HTN meds count, mean (95% CI)[1]					
6 weeks	50	0.5 (0.4 , 0.8)	41	0.4 (0.3 , 0.7)	0.328
6 months	43	0.7 (0.4 , 1.0)	37	0.5 (0.3 , 0.8)	0.249
1 year	25	0.5 (0.3 , 0.9)	31	0.4 (0.2 , 0.7)	0.600

[1]Adjusted for pre surgery value.
CI = confidence interval; HV = hepatic vagotomy.

RACE AND ETHNICITY DIFFERENCES IN AGE OF DIAGNOSIS FOR BREAST CANCER LEAD TO LEGISLATIVE REFORM FOR SCREENING MAMMOGRAPHY IN LOUISIANA

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Background: Historically, breast cancer screening guidelines have been based on age criteria alone. More recently, screening guidelines have been adopted to incorporate additional factors such as hereditary susceptibility, strong family history, increased predictive lifetime risk, and breast density. There are also no uniform consensus guidelines across multiple medical societies regarding recommended age of onset and frequency of breast cancer screening. Are there other variables that could be considered? These were questions proposed by the scientific advisory board of the Cancer Advocacy Group of Louisiana (CAGLA), of which the senior author of this abstract is a board member.

Objective: Our aim was to potentially identify other factors that could influence breast cancer screening guidelines. We hypothesized that women of African American, Hispanic, and Asian descent present with breast cancer at a younger age. If there is a discrepancy between race/ethnicity and average age of presentation with breast cancer, could these demographic discrepancies demonstrate that there are certain populations that could potentially benefit from altered screening recommendations.

Methods: After application acceptance by the National Cancer database (NCDB), a joint program of the Commission on Cancer (CoC) of the American College of Surgeons and the American Cancer Society (ACS), we were granted encrypted files containing de-identified patient information of nationwide oncology outcomes from a database of over 1500 Commission accredited cancer programs in the United States. Statistical significance was ascertained using Statistical Analysis Software (SAS), Analysis of Variance (ANOVA), and Tukey's range testing.

Results: We found that the average age of diagnosis for early and intermediate stage breast cancer was approximately five years earlier for women of African American, Hispanic, and Asian descent compared to Caucasian women (57 vs. 62 years of age). These results prompted the scientific advisory board of the Cancer Advocacy Group of Louisiana (CAGLA) to propose and assist in authoring Louisiana legislation through Senate Bill (SB) 119 which was proposed in 2021. This bill incorporated race and ethnicity considerations into breast cancer breast screening guidelines for the first time, especially with a disproportionately higher percentage of these racial and ethnic groups in Louisiana.

Conclusion: The results of our study through data collected from the NCDB revealed that breast cancer may be diagnosed as much as five years earlier on average in women of African American, Hispanic, and Asian race/ethnicity compared to Caucasian women. Understanding the importance of screening and early detection for breast cancer, state legislation was proposed to alter recommended screening guidelines for the women of Louisiana. SB 199 passed through the state Senate & House, and it was signed into law by the governor of Louisiana in 2021. Women at increased risk of getting breast cancer at an earlier age based on ethnicity or race may now be screened for breast cancer beginning at age thirty-five (35) in Louisiana. This study stresses the utility of clinical research being used to impact healthcare legislation.

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SURGICAL AMPULLECTOMY IN MANAGEMENT OF BENIGN AND MALIGNANT LESIONS OF AMPULLARY AND PERI-AMPULLARY REGION

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Background: Malignant ampullary lesions are treated by a Whipple operation. When the lesion is small, local resection can be appealing if the resection margins can be negative with more than 1 mm. However, this approach is underutilized. We are reporting our experience with the surgical ampullectomy (Figure 1) in the management of benign and malignant lesions of ampullary and peri-ampullary region.

Objective: The aim of this study was to evaluate the safety and oncological result of surgical amupullectomy, conversion rate to Whipple, recurrence rate of malignant lesions, and patient survival in the management of ampullary and periampullary lesions.

Methods: From Oct 2010 to Aug 2021, we included 41 patients who had an ampullary or peri-ampullary lesion and were planned for surgical ampullectomy. Data were collected on patient demographics and characteristics of lesion (location, size, benign/malignant, margins, grading, and staging). Perioperative details such as OR time, estimated blood loss (EBL), length of hospital stay (LOS), opioid use during admission measured as total Morphine Milligram Equivalents (MME), and blood transfusion were calculated. Intraoperative and 90-day postoperative complications were evaluated. Our main outcomes of the study were the conversion rate of surgical ampullectomy to Whipple, recurrence rate of malignant lesions, and 5-year patient survival.

Results: Table 1 summarizes the patient demographics and study results. Lesions were predominantly at the ampulla (82.9%) and had a mean size of 3.4 cm. Lesions were 19.1% malignant, 7.3% with positive-resection margins, 23.1% of grades 3-4, and 44.4% with stages 2B-4. There were 8 and 2 patients who required intraoperative and postoperative blood transfusion, respectively. Mean OR time was 187 mins; mean EBL was 257 ml; average LOS was 9.5 days. Opioid use during admission was equivalent to an MME of 91.3 mg. One patient had an intraoperative complication of massive bleeding who had a completion Whipple surgery after three days. Four patients had postoperative complications, with three of them having the clavian-dindo classifications of 3b-4 and none of them resulting in patient death. Five ampullectomies were converted to Whipple, with three of them performed during the same operation and two performed afterward in another operation. Three ampullectomy patients had a recurrence of their malignant lesions after 16, 18, and 21 months respectively. Six patients in total died within five years of their surgery, of whom 4 patients had malignant lesions. The average survival time for the expired patients is 21.3 months.

Conclusion: Considering a small sample size, surgical ampullectomy is a feasible, safe, and oncologically equal option in the management of malignant lesions. It has a low conversion rate to Whipple, low recurrence rates, and good long-term results. We recommend it for small malignant lesions if one can get clear resection margins of more than 1 mm.

Figure 1: Intraoperative Image of Ampullectomy with Stents in Pancreatic and Biliary Ducts

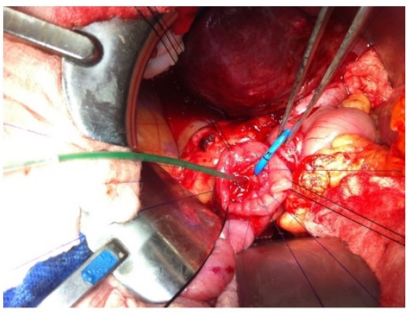

Table 1: Results

	Total number of patients (n=41)
Age (y), mean ± SD	63.8 ± 11.3
Gender (male), % [n]	53.7 [22]
Race (Caucasian), % [n]	65.9 [27]
BMI, (kg/m²), mean ± SD	30.2 ± 8.2
Location of lesions, % [n]	
-Ampullary	82.9 [34]
-Peri-ampullary	17.1 [7]
Lesion size (cm), mean ± SD	3.4 ± 2.7
Malignant lesions, % [n]	46.3 [19]
Grading, %	
- Grades 3 + 4	23.1
- Grades 1 + 2	76.9
Staging, %	
- Stages 2B + 3A + 3B + 4	44.4
- Stages 1A + 1B + 2A	55.6
Margins (positive), %	7.3 [3]
Need for intraoperative blood transfusion, % [n]	19.5 [8]
Intraoperative blood transfusion (units), mean ± SD	2.8 ± 2.7
Need for postoperative blood transfusion, % [n]	4.9 [2]
Postoperative blood transfusion (units), mean ± SD	2.0 ± 0.0
Operative time (mins), mean ± SD	186.9 ± 77.8
Estimated blood loss (ml), mean ± SD	257.4 ± 531.9
LOS (d), mean ± SD	10.2 ± 6.2
Perioperative total MMEs (mg), mean ± SD	91.3 ± 96.5
Intraoperative complications, % [n]	2.4 [1]
90-day postoperative complications, % [n]	9.8 [4]
Conversion rate to Whipple, % [n]	12.2 [5]
Recurrence rate, % [n/total malignant lesions]	15.8 [3/19]
Recurrence period (months), mean ± SD	18.3 ± 2.5
5-year patient survival, % [n]	85.4 [35]
Survival time for the expired patients (months), % [n]	21.3 ± 22.1
Average follow-up duration (months), mean ± SD	43.1 ± 27.0

DIMETHYL MALONATE DECREASES SUCCINATE ACCUMULATION AND PRESERVES CARDIAC FUNCTION IN A SWINE MODEL OF HEMORRHAGIC SHOCK

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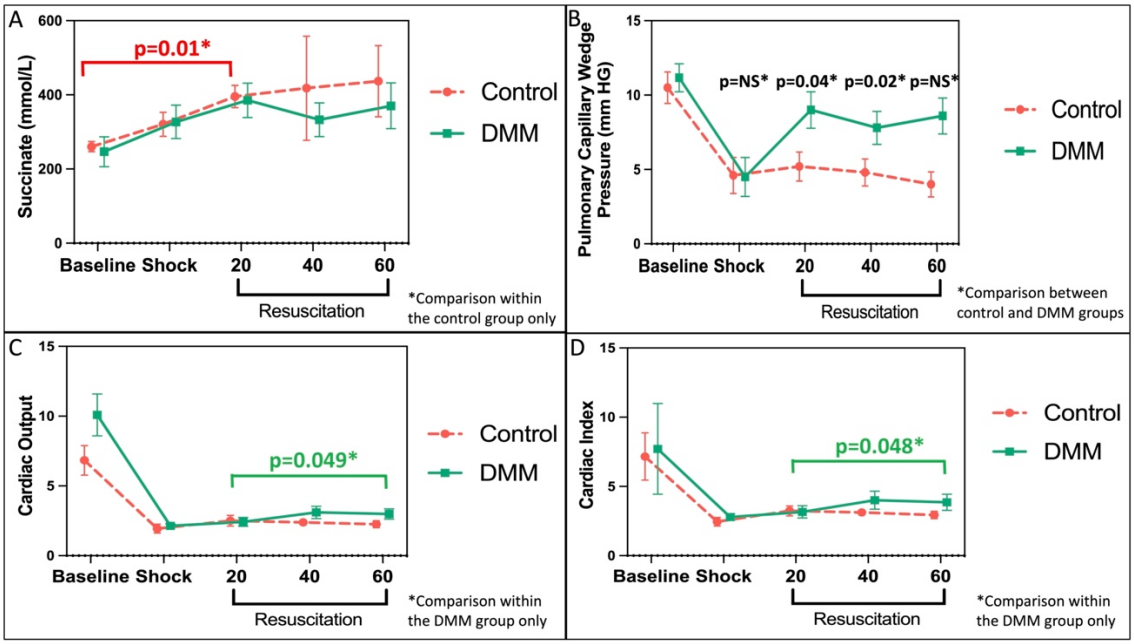
Background: Succinate (SI) is a citric acid cycle metabolite that accumulates in tissues during hemorrhagic shock (HS) due to electron transport chain uncoupling. Dimethyl malonate (DMM) is a competitive inhibitor of succinate dehydrogenase, which has been shown to reduce SI accumulation and protect against reperfusion injury. Whether DMM can be therapeutic during resuscitation after severe HS is unknown.

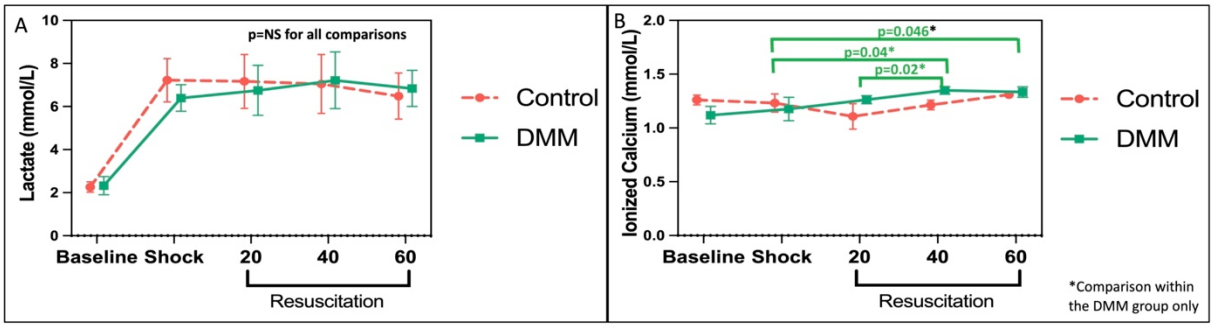
Objective: We hypothesized that DMM would prevent SI buildup during resuscitation in a swine model of hemorrhagic shock, leading to better physiological recovery after resuscitation (RES).

Methods: The carotid arteries of Yorkshire pigs were cannulated with a 5-French catheter. After placement of a Swan-Ganz catheter and femoral arterial line, the carotid catheters were opened and the animals were exsanguinated to a mean arterial pressure (MAP) of 45 mm HG. After 30 minutes in the shock state, the animals were resuscitated to a MAP of 60 mm HG using lactated ringers. A MAP above 60 mm HG was maintained throughout RES. One group received 10 mg/kg of DMM (n=6) while the control received sham injections (n=6). The primary end-point was SI levels. Secondary end-points included cardiac function and lactate levels.

Results: SI levels increased from baseline to the 20-minute RES point in the control, while the DMM cohort remained unchanged (Figure 1A). The DMM group required less IV fluid to maintain a MAP above 60 (450.0 vs. 229.0 mL, p=0.01). The DMM group had higher pulmonary capillary wedge pressure at the 20 and 40-minute RES points (Figure 1B). In addition, the DMM group had better recovery of cardiac output and index (Figure 1C-D) during RES, while the control had no improvement. While lactate levels were not different, DMM led to increased ionized calcium levels (Figure 2).

Conclusion: DMM reduces SI accumulation during HS and helps preserve cardiac filling pressures and function during RES. In addition, DMM protects against depletion of ionized calcium. DMM may have therapeutic potential during HS.


A
Succinate (mmol/L)
600
400
200
0
p=0.01*
Baseline Shock
20
40
60
Resuscitation
Control
DMM
*Comparison within the control group only
B
Pulmonary Capillary Wedge Pressure (mm HG)
15
10
5
0
p=NS* p=0.04* p=0.02* p=NS*
Baseline Shock
20
40
60
Resuscitation
Control
DMM
*Comparison between control and DMM groups
C
Cardiac Output
15
10
5
0
p=0.049*
Baseline Shock
20
40
60
Resuscitation
Control
DMM
*Comparison within the DMM group only
D
Cardiac Index
15
10
5
0
p=0.048*
Baseline Shock
20
40
60
Resuscitation
Control
DMM
*Comparison within the DMM group only


A
Lactate (mmol/L)
10
8
6
4
2
0
p=NS for all comparisons
Baseline Shock
20
40
60
Resuscitation
Control
DMM
B
Ionized Calcium (mmol/L)
2.0
1.5
1.0
0.5
0.0
p=0.046*
p=0.04*
p=0.02*
Baseline Shock
20
40
60
Resuscitation
Control
DMM
*Comparison within the DMM group only

PRE-HOSPITAL TOURNIQUETS ON LIMBS WITHOUT MAJOR VASCULAR INJURIES, HAS THE PENDULUM SWUNG TOO FAR?

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Background: Combat applications of tourniquets for extremity trauma have led to widely increased civilian pre-hospital tourniquet use for extremity trauma. Studies have demonstrated that prehospital tourniquet application, when applied appropriately, can decrease the incidence of arrival in shock without increasing limb complications. The aim of this follow-up study was to examine beneficial or potentially harmful outcomes of prehospital tourniquet placement on patients without definitive vascular injury.

Objective: To examine beneficial or potentially harmful outcomes of prehospital tourniquet placement on patients without vascular injury.

Methods: Retrospective review was performed of prospectively created data from 28 level I and II trauma centers in the United States. All patients in this subset analysis were those that were found to have no significant vascular injury. Patients who received a commercial tourniquet (PHTQ) in the pre-hospital setting were compared to patients with no pre-hospital tourniquet applied (No PHTQ). Outcomes analyzed were the rate of amputation, nerve palsy, compartment syndrome and mortality.

Results: A total of 622 patients had no vascular injury. The incidence of patients with no major vascular injury was higher in the PHTQ group (n=585/962, 60.8% vs. n=37/88, 42.0%, p<0.001). The majority of tourniquets were placed by EMS providers. There was no significant difference between the groups in the average patient age, gender, penetrating mechanism, injury severity scores (ISS), abbreviated injury score (AIS), and mortality (p>0.05). Amputation rates were 8-fold higher in the PHTQ group compared to the no PHTQ group. Incidence of nerve palsy and compartment syndrome were not different between the cohorts (p>0.05).

Conclusion: This study showed that a significant amount of tourniquets are being placed on patients without major vascular injuries. Amputation rates in patients with similar ISS and AIS were higher in the PHTQ when compared to those with those with No PHTQ. Further studies are necessary to fully elucidate the appropriateness and value of pre-hospital tourniquets, including targeted education of tourniquet placement by pre-hospital personnel.

	PHTQ n=585	No PHTQ n=37	p value
Age, mean yrs (SD)	37.0 (15.3)	38.0 (19.1)	0.70
Male gender, n (%)	401 (68.5)	27 (73.0)	0.71
Penetrating mechanism, n (%)	494 (84.4)	31 (83.7)	0.82
ISS, mean (SD)	9.9 (11.2)	10.0 (11.4)	0.96
AIS injured limb, mean (SD)	2.1 (1.1)	2.0 (0.81)	0.59
Amputation n (%)	49 (8.3)	0	0.11
Nerve Palsy n (%)	0	1 (2.7)	0.06
Compartment Syndrome (%)	0	0	1.0
Mortality n (%)	38 (6.4)	3 (8.1)	0.73

TRAUMA IN PREGNANCY: A REVIEW OF THE INCIDENCE, RISK FACTORS, AND MATERNAL-FETAL OUTCOMES

John T. Simpson, Vidda M. Simpson, Christofer B. Anderson, Danielle Tatum, Juan Duchesne, Patrick McGrew, Tulane School of Medicine

Background: Trauma injury occurs in approximately 6-8.3% of pregnancies and is associated with high rates of maternal and fetal morbidity.1–3 Trauma in pregnancy is the leading cause of non-obstetrical maternal death accounting for 20-46% of maternal deaths during pregnancy.4,5 Pregnant women are at an increased risk of mortality and violent trauma compared to non-pregnant patients.6 Blunt trauma, including motor vehicle accidents and falls, are the most common traumatic injuries occurring during pregnancy and represent 54.7% and 13.1% of traumas, respectively.1,7 Violent injury including penetrating trauma, sexual assault, and strangulation account for up 10% of cases.1,7 Trauma in pregnancy is also associated with high rates of fetal complications, including spontaneous abortion, preterm prelabor rupture of membranes, preterm birth, uterine rupture, cesarean delivery, placental abruption, and stillbirth.8,9 Following admission for any trauma, vaginal or cesarean delivery is required in approximately 5.1% of patients.1 Given the relatively low incidence of trauma during pregnancy and the even lower likelihood of a pregnant trauma patient requiring delivery, data regarding maternal and fetal outcomes following traumatic injury is limited.

Objective: This study aims to determine the incidence, risk factors, and maternal and fetal outcomes following trauma in pregnancy at a urban Level 1 Trauma center. We hypothesize that identifiable risk factors related to maternofetal outcomes in pregnant trauma patients exist and should be targeted during future educational or interventional programs in the management of traumatically injured pregnant patients.

Methods: This study is a retrospective observational cohort study of females who sustained blunt or penetrating trauma injury during their pregnancy and sought evaluation at University Medical Center (UMC) between 2008-2021. Pregnant females were compared to their non-pregnant female counterparts of reproductive age (12-51 years). Baseline demographic, clinical, and hospital characteristics were examined for the entire patient cohort. Chi-square, Fisher's Exact, and student's t tests were employed for univariate analysis of each independent factor. Significant variables were considered confounders and were included in further multivariate regression models. Receiver Operating Characteristic curve and Youden's index was generated for shock index and maternal mortality.

Results: A total of 6014 reproductive age females sustained blunt or penetrating trauma and were included in the study. Of these, 148 females were found to be pregnant and were more likely to be younger (26.0 ± 5.8 vs 31.3 ± 10.2, $p < 0.001$), African American (73% vs 54.2%, $p < 0.001$), and Medicaid payor status (60.8% vs 48.4%, $p = 0.003$). There was no significant difference in Injury Severity Score or mortality between pregnant and non-pregnant females. Independent risk factors for pregnancy loss included ISS >15, Glasgow Coma Scale (GCS) ≤8, massive transfusion protocol activation, Intensive Care Unit (ICU) admission, and need for any immediate operative procedure. Pregnancy loss occurred in 22 females (13 spontaneous abortion (SAB), 9 intrauterine fetal demise (IUFD)) and 9 patients required delivery (6 spontaneous vaginal delivery, 3 cesarean section). Peri-mortem cesarean section was required for 3 females with maternal arrest. The optimal cutoff for shock index as a predictor of maternal mortality was 1.12.

Conclusion: Traumatic injury in pregnancy is associated with a high risk of fetal loss. Young, African American females with Medicaid insurance are at highest risk of trauma during pregnancy and prenatal counseling should target this cohort. Clinicians should have high concern for pregnancy loss and should consider extended fetal monitoring in trauma patients with ISS >15, GCS ≤8, massive transfusion protocol activation, ICU admission, and need for any immediate operative procedure. Further study is required to validate shock index as a predictor of mortality in pregnant females.

Figure 1. Receiver operating curve for maternal shock index as a risk factor for mortality.

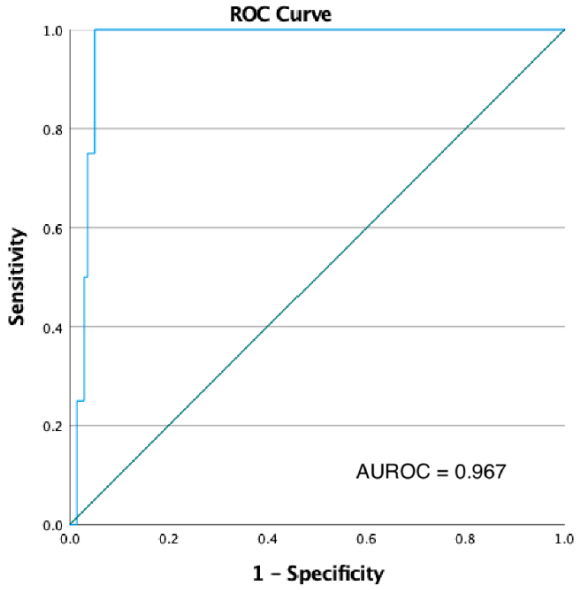

Table 1. Baseline demographic and clinical characteristics of non-pregnant and pregnant females who sustained traumatic injury.

Characteristics	Non-Pregnant N = 5886	Pregnant N = 148	*P*
Presentation			
Age	31.3 ± 10.2	26.0 ± 5.8	<0.001
Race			
African American	3179 (54.2)	108 (73.0)	<0.001
Caucasian	2306 (39.3)	34 (23.0)	<0.001
Asian	46 (0.8)	3 (2.0)	0.119
American Indian	4 (0.1)	0 (0.0)	0.91
Hawaiian/Pacific Islander	3 (0.1)	0 (0.0)	0.93
Other	318 (5.4)	3 (2.0)	0.91
Comorbidities			
Tobacco Use	657 (11.2)	16 (10.8)	0.88
Alcohol Use	88 (1.5)	1 (0.7)	0.41
Substance Abuse	224 (3.8)	6 (4.1)	0.88
Psychiatric Illness	451 (7.7)	5 (3.4)	0.05
Insurance Type			
Medicare/Medicaid	2841 (48.4)	90 (60.8)	0.003
Underinsured	1316 (22.6)	17 (11.5)	0.002
Commercial	1038 (17.7)	19 (12.8)	0.13
CHAMPVA	25 (0.4)	0 (0.0)	1.0
Other	644 (11)	22 (14.9)	0.14
Mechanism			
Blunt	4330 (73.8)	97 (65.5)	0.02
Penetrating	1463 (24.9)	50 (33.8)	0.01
Thermal	72 (1.2)	1 (0.7)	1.0
GCS			
Mean ± SD	13.9 ± 3.0	14.0 ± 3.0	0.79
ISS			
Mean ± SD	7.9 ±9.3	7.1 ±9.4	0.32
ISS >15	896 (15.3)	21 (14.2)	0.72
Vitals			
HR	96.5 ± 23.1	101.7 ±22.0	0.006
SBP	127.1 ± 26.4	122.5 ± 22.9	0.04
Shock Index			
Mean ± SD	0.77 ± 0.25	0.83 ± 0.22	0.002
≥ 0.9	1278 (22.4)	42 (29.6)	0.045
SCI	100 (1.7)	3 (2.0)	0.77
TBI	752 (12.8)	15 (10.1)	0.33
Evaluation			
UDS Positive	929 (15.8)	20 (13.5)	0.44
Serum Alcohol Positive	2193 (37.4)	41 (27.7)	0.02
Imaging			
Chest X-ray	4322 (73.7)	107 (72.3)	0.70
Pelvic X-Ray	1109 (18.9)	18 (12.2)	0.04
FAST	1572 (26.8)	66 (44.6)	<0.001
FAST Positive	148 (2.5)	6 (4.1)	0.24
CT Chest	1654 (28.2)	34 (23.0)	0.16
CT Abdomen & Pelvis	2571 (43.8)	43 (29.1)	<0.001
MTP	118 (2.0)	5 (3.4)	0.25
Outcomes			
Disposition			
Home	2052 (35)	40 (27)	0.045
Floor	1650 (28.1)	26 (17.6)	0.005
ICU	1033 (17.6)	26 (17.6)	0.98
OR	862 (14.7)	21 (14.2)	0.86
Transfer	36 (0.6)	29 (19.6)	<0.002
Mortality	242 (4.1)	6 (4.1)	0.95
Death Location			
ED	102 (1.7)	1 (0.7)	0.33
Floor	2 (0.03)	0 (0.0)	1.0
ICU	103 (1.8)	2 (1.4)	0.71
OR	34 (0.6)	3 (2.0)	0.06

Table 2. Maternofetal outcomes following trauma in pregnancy.

Characteristics	Pregnant N = 148
Maternofetal Outcomes	
Mechanism of Injury	
GSW	33
Stab	9
MVC	83
Pedestrian vs MVC	7
Assault	5
Other	11
Maternal Death	6
Pregnancy Loss	22
SAB	13
IUFD	9
Procedures	
Perimortem C-section	3
Delivery	6
C-section	3
D&C	4
Uterine Repair	3
Exploratory laparotomy	8

Table 3. Risk factors for pregnancy loss following trauma during pregnancy.

Risk Factor	Odds Ratio	95% CI	*p*
ISS >15	22.6	4.03-33.36	<0.001
GCS ≤8	6.38	1.90-21.3	<0.01
MTP	9.79	1.53-62.46	0.02
ICU Admission	1.05	1.26-9.34	0.02
Operative Procedure	3.73	1.30-10.73	0.01

POLY-ADP RIBOSE POLYMERASE INHIBITORS PROTECT THE GLYCOCALYX FROM LIPOPOLYSACCHARIDE INJURY

Tyler Simpson, Robert Drury, Juan Duchesne, Sharven Taghavi, Emad Kandil, Mourad Zerfaoui, Olan Jackson-Weaver, Tulane School of Medicine

Background: The endothelial glycocalyx is a protein and carbohydrate lining of the vasculature produced by endothelial cells. It regulates coagulation, inflammation, vascular permeability, and is necessary for endothelial shear stress sensing. The endothelial glycocalyx is shed in septic shock, hemorrhagic shock, and trauma, as well as many ischemia-reperfusion events. Shedding of the glycocalyx is associated with coagulopathy, acute lung injury, and endothelial dysfunction. Clinical treatments for glycocalyx shedding have not yet been developed. We have previously reported that lipopolysaccharide (LPS)-induced glycocalyx damage can be mitigated by anti-inflammatory agents such as IL-22. Poly ADP ribose polymerase (PARP) inhibitors were developed as cancer therapies, due to the dependence of cancer cells on PARP to repair DNA damage. However, general anti-inflammatory properties have also been observed by inhibiting PARP. We hypothesized that PARP inhibitors would reduce LPS-induced glycocalyx damage.

Objective: This study aimed to evaluated the effect of PARP inhibitors on LPS-induced glycocalyx damage.

Methods: Human umbilical vein endothelial cells (HUVECs) were exposed to 1 μg/mL lipopolysaccharide (LPS) for 24 hours. LPS injured cells were treated with vehicle or 1 μM of the PARP inhibitors Olaparib, Rucaparib, or Veliparib. Cells were fixed and stained with FITC-labelled wheat germ agglutinin (WGA) to quantify glycocalyx.

Results: LPS damaged the glycocalyx as previously reported (14.6 ± 0.3 vs 11.8 ± 0.2 fluorescence units). Olaparib, Rucaparib, and Veliparib all prevented this glycocalyx damage (13.9 ± 0.8, 13.5 ± 0.5, 14.4 ± 0.6, respectively, vs. 11.8 ± 0.2).

Conclusion: PARP inhibitors were effective at preventing endothelial glycocalyx damage in an in vitro cell culture system. PARP inhibitors should be considered for future studies of glycocalyx damage in sepsis, acute lung injury, and hemorrhage

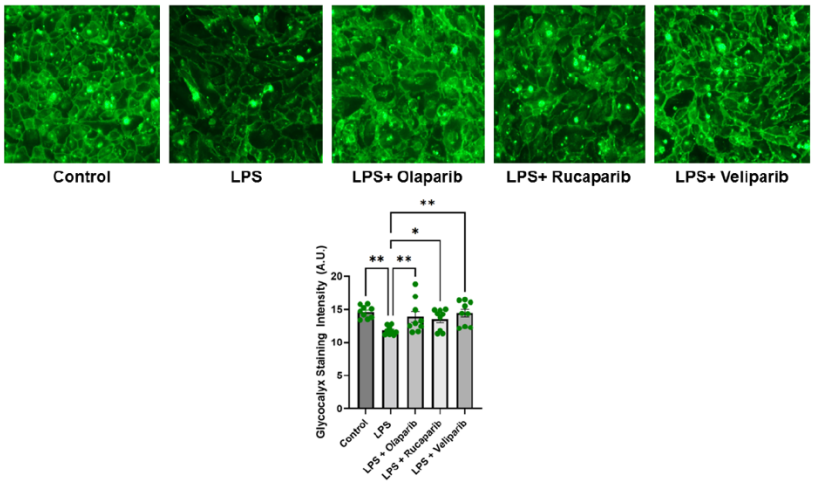

Figure 1. Comparison of glycocalyx staining intensity for control HUVECs, LPS exposed, LPS exposed and Olaparib, LPS exposed and Rucaparib, and LPS exposed and Veliparib. Representative images are shown with green fluorescence indicating glycocalyx. Glycocalyx staining intensity is provided in mean and statistically significant differences are indicated by *.

A PROPENSITY-MATCHED ANALYSIS OF TRANEXAMIC ACID AND DEVELOPMENT OF PULMONARY COMPLICATIONS IN TRAUMA PATIENTS: A SECONDARY ANALYSIS OF AN EAST MULTICENTER TRIAL OF PREHOSPITAL PROCEDURES IN PENETRATING TRAUMA

Shariq S. Raza, MD, Danielle Tatum, PhD, Cody Meyer, MA, Jane Keating, MD, Zoe Maher, MD, Amy J. Goldberg, MD, Grace Chang, MD, Michelle Mendiola, MD, EAST Prehospital Procedures in Penetrating Trauma Study Group, Sharven S. Taghavi, MD, MPH, MS, Tulane School of Medicine

Background: The anti-inflammatory effects of tranexamic acid (TXA) in reducing endotheliopathy of trauma may be protective from acute lung injury. However, clinical data showing this benefit in trauma patients is lacking.

Objective: We hypothesized that TXA administration would mitigate pulmonary complications (PC) in penetrating trauma patients.

Methods: We performed a multicenter, prospective, observational study of adults (18+ years) with penetrating trauma to the torso and/or proximal extremity presenting at 25 urban trauma centers. TXA administration in the pre-hospital setting and < 24 hours of admission was examined. Subjects were propensity matched to compare similarly injured patients with or without TXA use. The primary outcome was development of any pulmonary complication (ARDS and/or pneumonia).

Results: A total of 2,382 patients met study criterion, of whom 206 (8.6%) received TXA. 93 (45%) received TXA in the pre-hospital setting and 113 (55%) received it within 24 hours of admission. Age, gender and incidence of massive transfusion did not differ between groups (Table 1). TXA group was more severely injured, more frequently presented in shock (SBP < 90), developed more PC and had worse survival (p<0.01 for all). After propensity matching, 410 patients remained (205/cohort) with no difference in age, gender, ISS, and hypotension. PC remained higher in TXA cohort (7.3% vs 2.4%, p=0.02). On logistic regression, TXA, increased ISS and presenting heart rate were associated with PC (Table 2). Survival was not different between the two cohorts on logistic regression (OR:1.47, 95%CI:0.63-3.42, p=0.37) or on propensity analysis.

Conclusion: TXA administration in penetrating trauma appears to be associated with more pulmonary complications. Larger studies are needed to further examine this relationship.

Table 2. Cox Regression Analysis of Patient/Injury Variables and Development of Pulmonary Complications[1]

Parameter	Hazard Ratio	95% CI	p-Value
Age	1.01	0.98-1.04	0.62
Male sex	0.66	0.22-2.01	0.46
ISS	1.05	1.02-1.07	**< 0.001**
ED HR	1.02	1.01-1.03	**< 0.001**
ED Shock (SBP < 90 mmHg)	0.54	0.13-2.22	0.39
ED GCS	0.98	0.87-1.11	0.75
TXA use	2.72	1.07-6.88	**0.04**

[1]Number of observations used = 1614. ISS – Injury Severity Score; ED – Emergency Department; HR – heart rate; SBP – systolic blood pressure; GCS – Glasgow Coma Scale; TXA – tranexamic acid.

Table 1. Unmatched and Propensity-Matched Analyses Comparing Patients that Received TXA[1]

Unmatched Groups			
Parameter	**No TXA** n= 2176 (91.4%)	**TXA** n= 206 (8.6%)	**p-Value**
Age‡	32.6 (23, 39)	31.6 (23, 37)	0.27
Male sex	1879 (86.4)	184 (89.3)	0.23
ISS‡	10.6 (1, 13)	21.4 (13, 26)	**< 0.001**
ED HR‡	89.9 (78, 108)	95 (78, 116)	0.05
ED Shock (SBP < 90 mmHg)	171 (10.2)	35 (21.3)	**< 0.001**
ED GCS‡	13.8 (15, 15)	12.9 (13, 15)	**< 0.01**
Massive Transfusion (≥10 units transfused)*	4 (0.2)	2 (1)	0.09
Pulmonary Complications	30 (1.4)	15 (7.3)	**< 0.001**
Survived	1962 (91.4)	175 (85.8)	**< 0.01**
Propensity-Matched Groups			
Parameter	**No TXA** n=205	**TXA** n=205	**p-Value**
Age‡	32.8 (22, 39)	31.6 (23, 37)	0.34
Male sex	186 (90.7)	183 (89.3)	0.62
ISS‡	22.12 (9, 26)	21.42 (13, 26)	0.7
ED HR‡	97.72 (83, 120)	95.12 (78, 116)	0.52
ED Shock (SBP < 90 mmHg)	31 (19.8)	34 (20.9)	0.80
ED GCS‡	13.17 (15, 15)	12.89 (13, 15)	0.53
Pulmonary Complications	5 (2.4)	15 (7.3)	**0.02**
Survived	164 (80)	175 (85.4)	0.15

All variables are frequencies reported as n (%) unless denoted by ‡, which indicates median (IQR25 – IQR75). TXA – tranexamic acid; ISS – Injury Severity Score; ED – Emergency Department; HR – heart rate; SBP – systolic blood pressure; GCS – Glasgow Coma Scale. *Transfusion in prehospital and ED setting.

IMPACT OF INCREASED ENOXAPARIN DOSING ON ANTI-XA LEVELS FOR VENOUS THROMBOEMBOLISM PROPHYLAXIS IN TRAUMA PATIENTS

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Background: Venous thromboembolism (VTE) contributes to significant morbidity in trauma patients and increases hospital costs and length of stay. Standard trauma prophylaxis dosing with enoxaparin 30 mg twice daily may be inadequate to prevent VTEs.

Objective: The objective of this study was to compare standard dosing of enoxaparin to an increased dose of enoxaparin 40 mg twice daily for trauma patients. We hypothesized that increasing thromboprophylaxis dosing leads to an increase in therapeutic anti-Xa levels and reduced VTE rates.

Methods: A retrospective study was performed from January 2020 to June 2021 at a Level I trauma center, following implementation of an increased enoxaparin dosing strategy. Patients with increased enoxaparin dosing were compared with those who received standard dosing. The primary outcome evaluated was the incidence of subtherapeutic anti-Xa levels. Secondary outcomes evaluated VTE rates and clinically significant bleed.

Results: A total of 204 trauma patients were identified. Ninety-one patients received an increased enoxaparin dose compared to 113 who received standard dosing. The baseline demographics of both groups were similar (p>0.05). Subtherapeutic levels were higher with standard dosing compared to the increased dose (50% vs. 22%, p=0.003). Higher VTE rates were observed with standard dosing compared to higher dosing (6.2% vs 3.3%) but with a lower incidence of major bleed (1.8% vs 4.4%). Overall annual VTE rates decreased from 1.6% to 1.3% after implementation of the increased dosing regimen.

Conclusion: This study demonstrated that an increased dosing strategy decreased rates of subtherapeutic anti-Xa levels and trended toward lower overall VTE rates in trauma.

Table for LA-ACS:

	Increased enoxaparin dose 40 mg SQ BID (N=91)	**Standard enoxaparin dose 30 mg SQ BID** (N=113)	p value
Anti-Xa Level[†]			
Subtherapeutic, N (%)	22 (24)	50 (44)	0.003
Therapeutic, N (%)	41 (45)	34 (30)	0.03
Supratherapeutic, N (%)	6 (6.6)	1 (0.9)	0.04
Peak and trough discrepancy, N (%)	22 (24)	28 (25)	1.0
Clinical Outcomes			
Development of VTE, N (%)	3 (3.3)	7 (6.2)	0.52
Major Bleed, N (%)	4 (4.4)	2 (1.8)	0.41
Annual Incidence of VTE among all trauma admissions	34 (1.6)**	39 (1.3)*	0.29

[†]Peak and trough levels evaluated. Supratherapeutic levels and peak/trough discrepancies not reported
*Incidence of VTE rates (N=39) among all trauma admissions from August 2019-July 2020 (N=2399)
**Incidence of VTE rates (N=34) among all trauma admissions from August 2020-July 2021 (N=2681)

URBAN VS RURAL: IS THERE A DIFFERENCE IN OUTCOMES FOR PATIENTS WHO UNDERGO PRE-HOSPTIAL NEEDLE DECOMPRESSION?

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Background: Tension pneumothorax is a highly lethal condition in trauma patients that must be recognized and rapidly treated. Needle decompression is a procedure that was introduced in the pre-hospital setting to treat tension pneumothorax. However, few studies have examined this procedure in the rural setting where EMS transport times can be prolonged. The objective of this study was to compare the efficacy of needle thoracostomies for trauma patients performed in two distinct pre-hospital settings.

Objective: To compare the efficacy of needle thoracostomies for trauma patients performed in two distinct pre-hospital settings.

Methods: Adult trauma patients who underwent needle decompressions (NDs) presenting to an urban Level 1 trauma center or a rural Level 2 trauma center from January 2012- December 2021 were identified. The primary outcome measured in this study was mortality, including the return of spontaneous circulation (ROSC) after pre-hospital cardiac arrest. Data were compared using univariate analyses.

Results: A total of 422 patients met inclusion criteria with 5% NDs (n=20) being performed in the rural setting. Patients in the urban setting were significantly younger, more likely to have a penetrating mechanism and were more often transported via ground compared to rural patients (P<.05). Both groups were similar in terms of injury severity and shock index (p<.05). In rural patients EMS spent more time on scene and had longer transport times (p<.05) whereas urban patients were more likely to undergo bilateral needle decompression (p<.05). The incidence of pre-hospital cardiac arrest was higher in the urban setting compared to rural (59% vs 25%, p=.004) with higher mortality (55% vs 30%, p=.04) The percentage of patients who obtained ROSC after ND was 42%.

Conclusion: Needle decompression is a procedure routinely performed in the pre-hospital setting with a paucity of data to support its use. This study found that rural trauma patients despite undergoing a longer transport time, were less likely to suffer prehospital cardiac arrest after undergoing ND. When compared to the rural population, rates of mortality and bilateral needle decompression were twice as high in the urban population, suggesting needle decompression may not be as efficacious in this population. Future prospective studies are needed to further refine pre-hospital practices.

Table 1.

Patient Demographics	Urban n= 402	Rural n= 20	p value
Age, avg yrs (SD)	34.0 (14.8)	40.8 (20.5)	*0.05*
Male gender, n (%)	391 (97.3)	19 (95.0)	0.45
Blunt trauma, n (%)	127 (31.6)	15 (75.0)	*<0.001*
ISS, avg (SD)	23.9 (13.7)	25.9 (20.5)	0.54
EMS Data			
Air transport, n (%)	32 (8.0)	5 (25.0)	*0.02*
Total EMS on scene time, avg min (SD)	9.1 (5.0)	13.0 (9.4)	*0.001*
Total transport time, avg min (SD)	11.2 (7.5)	44.9 (27.8)	*<0.001*
Bilateral needle decompression, n (%)	246 (61.2)	5 (25.0)	*0.002*
Shock index, avg (SD)	0.97 (0.48)	0.83 (0.36)	0.20
Pre-hospital cardiac arrest, n (%)	236 (58.7)	5 (25.0)	*0.004*
Emergency Department Data			
Shock index, avg (SD)	0.98 (0.45)	0.79 (0.34)	0.06
Mortality in ED, n (%)	223 (55.5)	6 (30.0)	*0.04*
Clinical Outcomes			
HLOS, avg days (SD)	5.9 (10.7)	7.7 (13.2)	0.47
Overall mortality, n (%)	267 (66.4)	6 (30.0)	*0.001*

SERUM BILIRUBIN AT THE TIME OF CHOLECYSTOSTOMY TUBE PREDICTS THE NEED FOR SUBSEQUENT CHOLECYSTECTOMY

Berenson, A., Doran, M., Strollo, B., Burton, J., Townsend, M., Babin, J., Millien, J., Brown, R., Fuhrman, G., Ochsner Medical Center

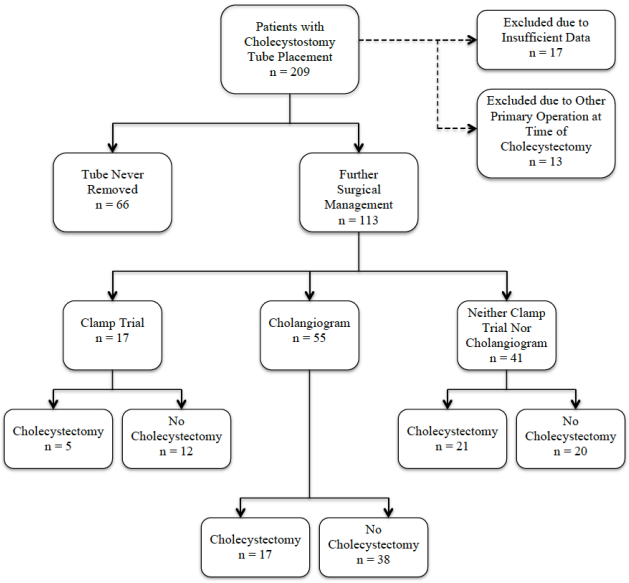
Background: Percutaneous cholecystostomy tube (PCT) drainage is an effective management strategy for acute cholecystitis (AC) in patients medically unfit for surgery. However, little is known about the fate of patients managed by PCT. We conducted this study to determine tube management outcome predictors for patients with acute cholecystitis managed by PCT.

Objective: Our aim was:
1) To further characterize the fate of patients after PCT (proceed to cholecystectomy, PCT removal, PCT left in place)
2) To predict the decision to perform cholecystectomy following PCT placement

Methods: The electronic record was queried to identify patients with acute cholecystitis managed by PCT from 2012-2020. Patients were divided into three groups for analysis: 1) ultimately managed by cholecystectomy, 2) eventual confirmation of distal flow of bile from the gallbladder and tube removal, and 3) tubes left in place without further management.

Results: A total of 179 patients with acute cholecystitis treated by PCT were included. Sixty-six patients never fully recovered from their medical insult associated with their diagnosis of acute cholecystitis and had their tubes left in situ. Sixty-four of these 66 patients (97%) died during follow up. The remaining 113 patients recovered from their illness and presented to clinic for evaluation for tube removal and or cholecystectomy. When distal biliary flow was confirmed, tube removal was favored (n=70). When cystic duct outflow occlusion persisted, cholecystectomy was planned for patients who became acceptable surgical candidates (n=43). The patients requiring cholecystectomy had a bilirubin of 3.4 micromol/L at the time of diagnosis of acute cholecystitis, while the patients treated with simple tube removal had a bilirubin of 1.8 micromol/L. The difference in total serum bilirubin between group 1 and 2 was statistically significant ($p = 0.035$). For patients managed by cholecystectomy, 8 were approached open and 35 laparoscopically, with 12 of 35 (36.1%) converted to open and 23 (63.9%) completed laparoscopically.

Conclusion: Our study suggests that elevated bilirubin at the time of PCT predicts an unresolvable form of cystic duct obstruction and need for cholecystectomy. For patients who recover from their acute illness, we favor an evaluation of distal bile flow from the gallbladder and when noted, simple tube removal. We reserve cholecystectomy for patients who recover from their illness and demonstrate persistent cystic duct outflow obstruction.



	Group 1 (N=43)	Group 2 (N=70)	Group 3 (N=66)	P-Value*			
				Overall	1 vs 2	1 vs 3	2 vs 3
Age, mean (SD)	66.9 (17.1)	68.9 (14.7)	65.2 (16.5)	0.405			
Female, n (%)	21 (48.8)	22 (31.4)	28 (42.4)	0.157			
Race, n (%)				0.275			
Black	9 (20.9)	25 (35.7)	20 (30.3)				
White	31 (72.1)	40 (57.1)	37 (56.1)				
Other/Unknown	3 (7.0)	5 (7.1)	9 (13.6)				
BMI, mean (SD)	32.9 (13.0)	29.4 (7.5)	29.2 (9.8)	0.120			
CCI, mean (SD)	5.0 (2.9)	5.4 (2.6)	5.5 (2.3)	0.582			
ASA Score							
1 - Normal/healthy	1 (2.3)	0 (0)	0 (0)	0.240			
2 - Mild systemic disease	6 (14.0)	13 (18.6)	5 (7.6)	0.169			
3 - Severe systemic disease	24 (55.8)	43 (61.4)	27 (40.9)	0.050			
4 - Severe systemic disease that is threat to life	12 (27.9)	14 (20.0)	34 (51.5)	**<0.001**	0.332	**0.015**	**<0.001**
Acalculous, n (%)	4 (9.3)	13 (18.6)	23 (34.9)	**0.005**	0.181	**0.003**	**0.032**
Diagnostic Modality –							
HIDA	16 (37.2)	23 (32.9)	25 (37.9)	0.809			
Modality - US	32 (74.4)	47 (67.1)	49 (74.2)	0.584			
Modality - CT	25 (58.1)	54 (77.1)	47 (71.2)	0.098			
PTC Complications, n (%)	2 (4.7)	0 (0)	2 (3.0)	0.130			
Length of stay after chole tube, mean (SD)	6.4 (7.1)	9.4 (11.4)	9.5 (10.1)	0.240			
White blood cells, mean (SD)	15.9 (9.9)	15.0 (7.6)	18.5 (17.2)	0.140			
Total bilirubin, mean (SD)	3.4 (4.7)	1.8 (2.1)	4.8 (6.9)	**0.001**	**0.035**	0.263	**<0.001**
AST, mean (SD)	136.6 (222.5)	126.1 (207.8)	180.0 (495.9)	0.271			
ALT, mean (SD)	127.9 (190.3)	93.9 (157.9)	91.0 (163.4)	0.123			
Alkaline Phosphatase, mean (SD)	192.5 (177.1)	161.7 (136.9)	294.2 (325.2)	**0.003**	0.479	**0.024**	**0.001**
Deceased, n (%)	15 (34.9)	28 (40.0)	64 (97.0)	**<0.001**	0.587	**<0.001**	**<0.001**

**P values from post-hoc pairwise comparisons only provided if overall test is statistically significant (at significance level 0.05)*

Table 1. Patient demographics, clinical characteristics, and outcomes by study group

	Cholecystectomy (Group 1) n = 43	Tube Removal (Group 2) n = 70
Clamp Trial	n = 5	n = 12
Recurrence	5	1
Asymptomatic	0	11
Cholangiogram	n = 17	n = 38
Duct Obstructed	7	4
Duct Patent	9	29
PCT Malfunction/Displacement	1	5
Neither Clamp Trial Nor Cholangiogram	n = 21	n = 20
Recurrence	10	1
Asymptomatic	0	18
Patient Preference	11	1
Death within 90 days of Tube Removal	6 (14.0%)	9 (12.9%)

Table 2. Outcomes following PCT Management

BATTLE OF THE BUTTRESS: 5-YEAR PROPENSITY-MATCHED ANALYSIS OF STAPLE LINE REINFORCEMENT TECHNIQUES FROM THE MBSAQIP DATABASE

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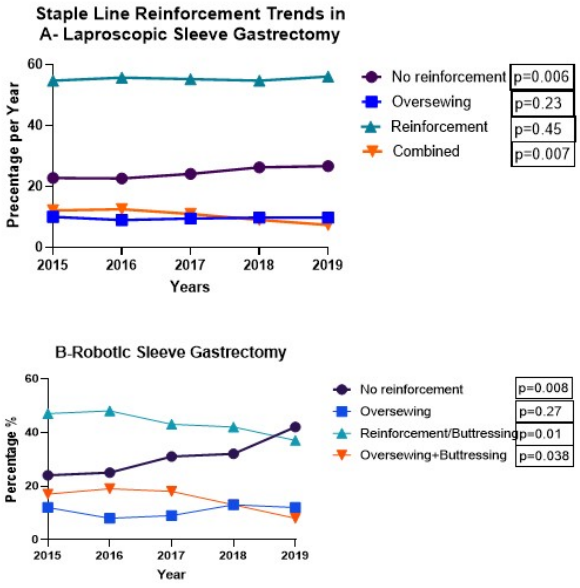
Background: Sleeve gastrectomy has demonstrated to be safe. However, controversy still exists regarding the most efficacious way to decrease complications such as bleeding and staple line leaks. There is a considerable variation in operative techniques including no-reinforcement (NR), oversewing, and buttressing (SLR).

Objective: Our goal was to evaluate the effect of these different methods on postoperative bleeding and staple line leaks using the Metabolic and Bariatric Surgery Accreditation Quality Initiative Program Database (MBSAQIP).

Methods: We queried the MBSAQIP database from 2015–2019 for patients undergoing sleeve gastrectomy (VSG). A propensity matched analysis was performed between different methods (NR, oversewing and SLR), and complications within 30 days were compared.

Results: 513,354 VSG cases were analyzed. 79.0% were female, mean age of 44 ± 9 years. Preop BMI was 43 ± 9 kg/m2. 88.0% were laparoscopic cases, and 12.0% were robotic. 54% of cases used SLR, 25.6% no reinforcement, 10.8% combination of oversewing and SLR, and 9.8% oversewing. During the study period the use of NR increased [Figure 1]. When compared to NR, SLR demonstrated lower rate of reoperations, overall bleeding, and major bleeding, but longer operative time and length of stay (p<.05). When compared to NR, oversewing demonstrated less overall bleeding, but longer operative times, and length of stay (p<.05). There were no differences in leaks (SLR vs NR/ oversewing vs NR). When compared to SLR, oversewing demonstrated longer operative times and length of stay (p<.05) and higher rate of post-operative ventilator use, postoperative pneumonia, and venous thrombosis (p<.05). When comparing patients that developed bleeding vs no bleeding, patients with bleeding had lower rate of SLR (56% vs 61%), oversewing (10.6% vs 10.9%) and higher rate of NR (34% vs 28%). Overall, leaks were more common amongst patients that had any bleeding (4.4% vs 0.3%), along with higher morbidity and mortality (p<.05).

Conclusion: The results of this study show: a) the use of NR continues to increase; b) SLR and oversewing were associated with a decreased incidence of bleeding, despite longer operative times; c) No method demonstrated a positive effect on leaks, but overall, patients with any level of bleeding were more likely to experience leaks, increased morbidity and mortality.



INPATIENT REHABILITATION AFTER PEDIATRIC TRAUMA: OUTCOMES AND LONG-TERM NEEDS

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Background: Traumatic injury is the leading cause of pediatric mortality and morbidity in the US. Pediatric trauma survivors requiring inpatient rehabilitation (IPR) require coordinated, multispecialty follow-up.

Objective: We aim to describe the long-term outcomes of pediatric trauma patients requiring IPR.

Methods: A retrospective review of pediatric trauma patients admitted after multitrauma (MT), traumatic brain injury (TBI), or spinal cord injury (SCI) to IPR between January 2018 and December 2020 was performed.

Results: Ninety-six patients met inclusion criteria. Majority were male (68%) and the mean age was 10.45 years. TBI patients were significantly younger (9.25±5.69 years) than MT (12.56±4.57) and SCI (12.33±5.02)(p=0.0220). The median hospital length of stay for the acute traumatic admission (27.5 days, IQR 15-44) and IPR was similar (23.5 days, IQR 12.5-36.5)(Table 1).

The majority of patients were discharged home with outpatient physical therapy (71.88%). Significantly fewer children in the TBI group were of school age (65%) compared to MT (88.89%) and SCI (88.89%)(p=0.0346). Of children who were school age, there were excellent return to school rates with 94.2% returning to school overall. Notably, after rehabilitation services nearly all (59/60, 97.37%) of TBI patients who were school age were able to return to school in some capacity (Table 2).

When stratified to look at each domain by the mechanism of trauma, we were able to see that IPR has profound impacts on self-care functional scores, with the most significant improvements for the TBI patients. When compared overall among the 3 injury groups, the only area where patients made significantly different improvement from admission to discharge was in bladder function, as the TBI and SCI groups were able to make more improvements than the MT group (Figure 1).

Similar to self-care domains, the change in functional scores for mobility improved from admission to discharge for almost all groups. The exception was for SCI patients in stair (p=0.002), where patients were unable to improve their score significantly. No scores were calculated for SCI in the walk domain due to the nature of their injury. MT and TBI patients made significant improvements between their admission and discharge scores for all categories in the mobility domain (Figure 2). Again, SCI did not improve their score for stair (p=1) but were able to make significant improvements in chair, toilet transfer, and tub transfer.

Overall improvements for cognition areas of comprehension (p=0.00066), expression (p=0.0028), memory (p=0.00059), and problem solving (p=0.037) were significantly different among injury groups. Social interaction score improvements were similar (p=0.21). However, when scores were compared from admission to discharge for each group, there were improvements across all areas for MT and TBI patients, but not for SCI. As SCI patients do not sustain head injury, these patients had near normal (7) scores at admission to rehabilitation, with the exception of social interaction, where these patients were able to make significant improvement in this domain (p=0.008)(Figure 2).

Conclusion: We found pediatric trauma patients admitted to IPR had positive progression during their therapy but required long-term care depending on the mechanism of injury, as predicted by the WeeFIM scores at discharge from inpatient rehabilitation. Excellent rates of returning to school were seen across the three injury types, despite severe injuries.

Figure 1. Overall functional improvement from admission to discharge WeeFIM scores in self-care, mobility, and cognitive domains.

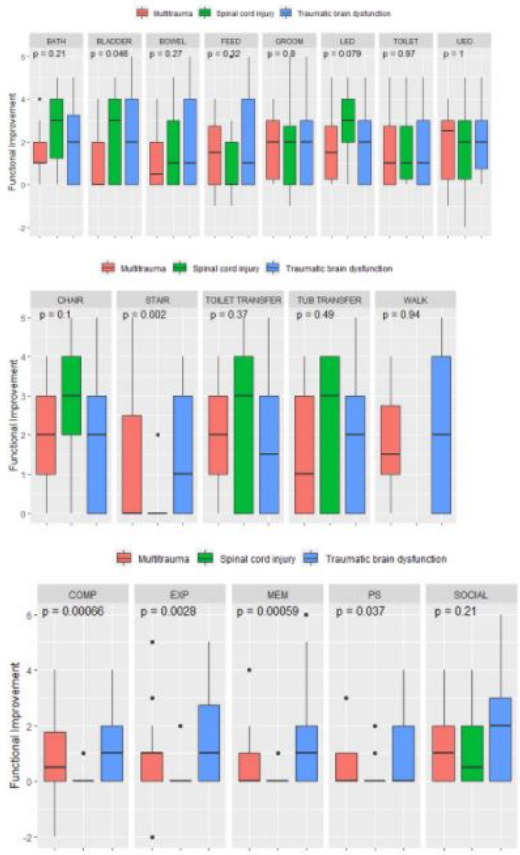

Figure 2. Functional scores at admission and discharge showing improvements for self-care, mobility, and cognition domains.

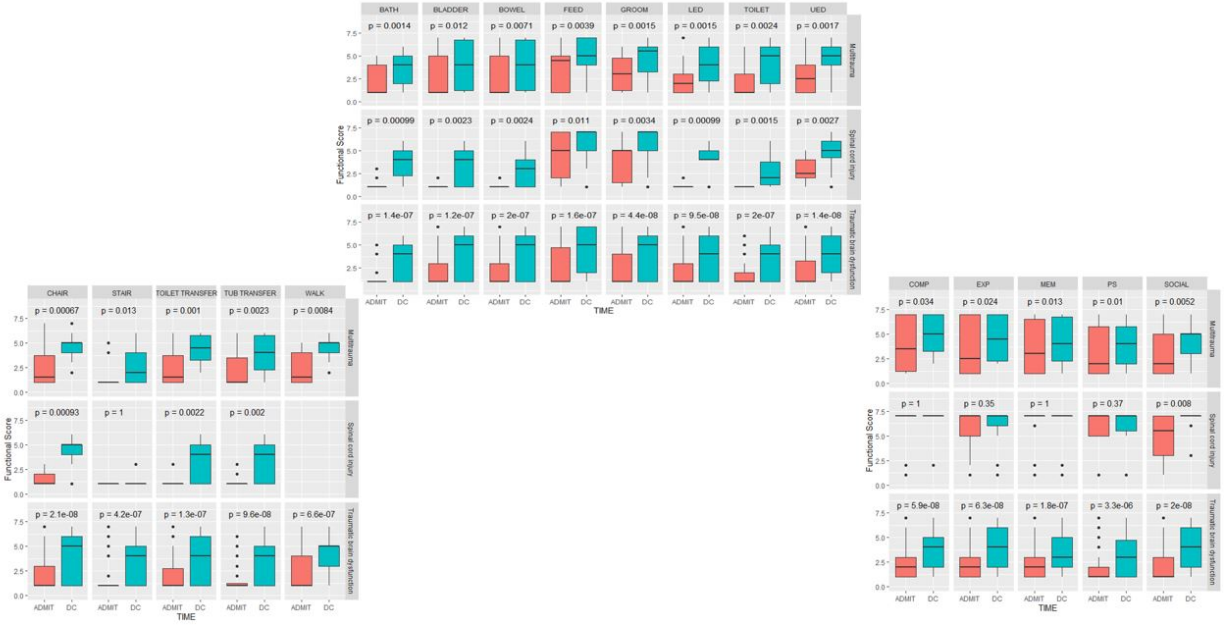

Table 1. Demographics of trauma patients admitted to the inpatient physical medicine and rehabilitation services from 2018-2020.

	All (n=96)	MT (n=18)	TBI (n=60)	SCI (n=18)	p-value [1]
Age, mean (std)	10.45 (5.54)	12.56 (4.57)	9.25 (5.69)	12.33 (5.02)	***0.0220***
Sex, % (n)					0.3836
Female	32.29 (31)	44.44 (8)	31.67 (19)	22.22 (4)	
Male	67.71 (65)	55.56 (10)	68.33 (41)	77.78 (14)	
Race, % (n)					0.4993
Black	58.33 (56)	44.44 (8)	61.67 (37)	61.11 (11)	
White	8.33 (8)	27.78 (5)	21.67 (13)	33.33 (6)	
Other	8.33 (8)	16.67 (3)	6.67 (4)	5.56 (1)	
Declined	25 (24)	11.11 (2)	10 (6)	0 (0)	

Table 2. Hospital and rehabilitation length of stay, disposition, and discharge needs by mechanism of traumatic injury.

	All (n=96)	MT (n=18)	TBI (n=60)	SCI (n=18)	p-value[1]
Hospital Days, median (IQR)	27.5 (15-44)	19 (9-57)	25.5 (15-45.5)	28.5 (25-42)	0.138
Rehabilitation Days, median (IQR)	23.5 (12.5-36.5)	30.5 (22-37)	19 (12-33)	23.5 (13-40)	0.5173
Discharge, % (n)					0.4275
Home	10.42 (10)	22.22 (4)	5 (3)	16.67 (3)	
Home with PT	71.88 (69)	61.11 (11)	75 (45)	72.22 (13)	
PICU	6.25 (6)	5.56 (1)	8.33 (5)	0 (0)	
Other	1.04 (1)	0 (0)	1.67 (1)	0 (0)	
Acute	10.42 (10)	11.11 (2)	10 (6)	11.11 (2)	
School Aged, % (n)	73.96 (71)	88.89 (16)	65 (39)	88.89 (16)	***0.0346***
Returned to School, % (n)[2]	91.55 (65)	81.25 (13)	94.87 (37)	93.75 (15)	0.2405
School Outcome, % (n)					0.8868
In person/virtual	66.67 (46)	60 (9)	68.42 (26)	68.75 (11)	
Homebound	33.33 (23)	40 (6)	31.58 (12)	31.25 (5)	

SIMULTANEOUS ORTHOTOPIC LIVER AND ORTHOTOPIC KIDNEY TRANSPLANTATION: A COMPARISON WITH THE TRADITIONAL SURGICAL TECHNIQUE

Hosein Shokouh-Amiri, Muhammad S. Naseer, Donnie Aultman, Robert McMillan, Gazi B. Zibari, Willis Knighton Health System

Background: Many surgical techniques have been proposed to perform simultaneous liver-kidney transplantation (SLKT). The standard technique is to transplant liver in an orthotopic and kidney in a heterotopic fashion. We performed liver-kidney transplantation using another approach; simultaneous orthotopic liver and orthotopic kidney transplantation (SOLOKT), which has not been reported yet. We are reporting our experience with this novel technique, discussing its advantages and disadvantages, graft and patient outcomes, and complications as compared to the conventional SLKT technique.

Objective: We hypothesized that SOLOKT will lead to shorter cold ischemia time (CIT) for kidney allograft, shorter ICU and hospital stay, and lesser development of hematoma/fluid collection at the surgical site and other complications.

Methods: Since 2012, we have performed 20 liver-kidney transplantations, of whom 7 were SOLOKT. If during SOLOKT surgery there was difficulty in accessing the native kidney due to frozen abdomen, the technique was converted to conventional SLKT. Data collection included patient demographics and characteristics such as age, gender, race, BMI, and MELD scores. Perioperative findings included CIT for liver and kidney allografts, intraoperative blood loss and use of blood products, and use of narcotics during admission. Outcome variables included 90-day readmission rate, 1-year complications, 3-year death-censored liver and kidney grafts survival, and 3-year patient survival. Categorical variables with Chi-Square test, continuous variables with Student's T-test, and survival analysis with Mantel-Cox test were done using SPSS.

Results: Table 1 highlights the study results. The two cohorts were similar in demographics and baseline characteristics. There were no significant differences in length of operation, CIT for liver and kidney allografts, intraoperative use of blood products, use of narcotics during admission, 90-day readmission rate, and 3-year death-censored liver and kidney grafts survival, and 3-year patient survival. There was more intraoperative blood loss in SOLOKT as compared to SLKT [6500 vs 4000 ml, p-value=0.02]. Lengths of ICU and hospital stay were shorter and 1-year complications were fewer in SOLOKT as compared to SLKT, however, it did not reach statistical significance. There are a few advantages of SOLOKT technique as compared to SLKT. It avoids a surgical incision in the iliac fossa and a second operation for kidney transplantation, hence decreasing chances of hematoma/fluid collection. It prevents the discard of a viable organ in cases of inadvertently cut ureter during donor-kidney procurement using uretero/pyelo-ureterostomy. With no added operative time, it relatively shortens CIT for kidney allograft. The dissection in renal fossa is simpler and anastomosis is easier using the stumps of renal artery, renal vein, and ureter. Furthermore, SOLOKT does not require any special expertise or extra instruments to perform.

Conclusion: SOLOKT can be done advantageously with no added operative time, complications, or adverse effects on liver and kidney allografts, have similar graft and patient outcomes, and requires a shorter and single surgical incision yielding better cosmetic results [Figure 1]. We believe this novel approach can be added to the armamentarium of SLKT.

Figure 1: Cosmetic results of SLKT on the left and SOLOKT on the right

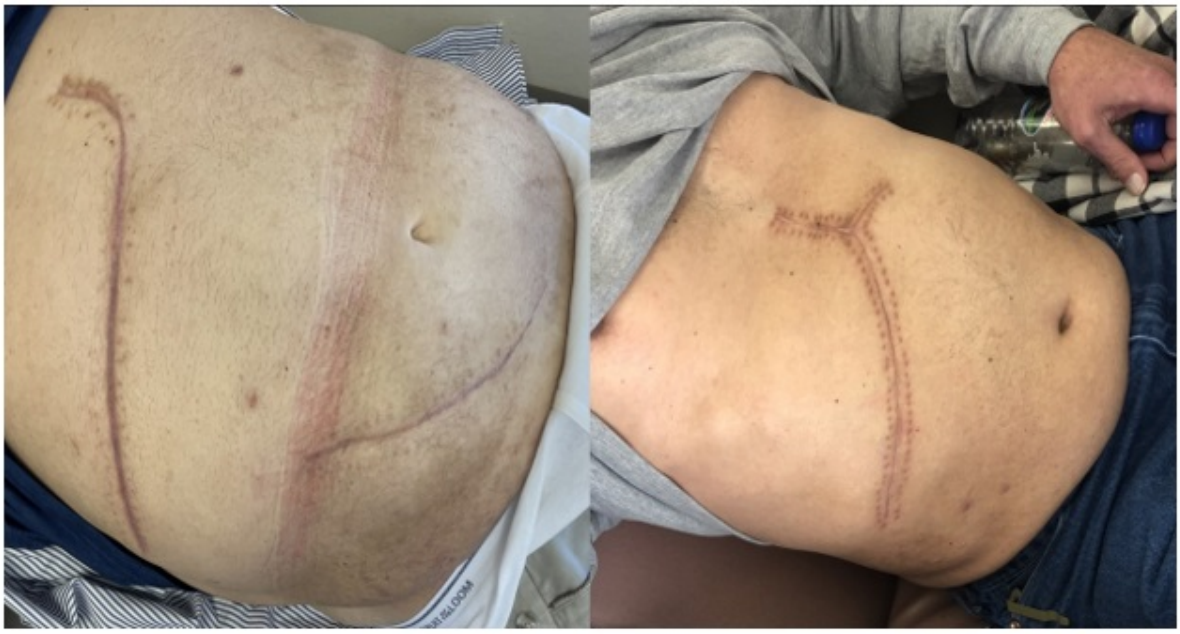

Table 1: Results

	SOLOKT (n=7)	SLKT (n=13)	P-Value
Age (y), mean ± SD	59.57 ± 5.56	64.31 ± 5.81	0.095
Gender (male), % [n]	57.1 [4]	53.8 [7]	0.888
BMI (kg/m²), mean ± SD	30.71 ± 8.98	33.56 ± 6.67	0.430
Ethnicity (Caucasian), % [n]	71.4 [5]	76.9 [10]	0.621
MELD scores, mean ± SD	25.43 ± 5.50	27.02 ± 8.27	0.656
Length of operation (mins), mean ± SD	486.00 ± 62.78	469.15 ± 68.53	0.596
CIT Liver (h:mm)	6:59	6:22	0.564
CIT Kidney (h:mm)	8:58	9:12	0.833
Intraoperative Blood Products			
-PRBCs (units), mean ± SD	10.57 ± 7.00	13.00 ± 6.81	0.468
-FFPs (units), mean ± SD	8.29 ± 3.20	9.92 ± 5.82	0.507
-Plts (units), mean ± SD	6.57 ± 4.43	4.75 ± 2.70	0.277
-Cryo-5 (units), mean ± SD	0	0.33 ± 0.65	0.104
-Cell Saver Blood (units), mean ± SD	1944.14 ± 1511.48	1641.90 ± 899.77	0.612
Estimated Blood Loss (ml), mean ± SD	6500.00 ± 1802.78	4000 ± 978.09	0.019
Length of ICU stay (d), mean ± SD	2.86 ± 1.68	8.46 ± 9.34	0.055
Length of hospital stay (d), mean ± SD	7.71 ± 3.40	15.69 ± 15.83	0.209
Total Morphine Milligram Equivalents (mg), mean ± SD	202.45 ± 259.44	277.55 ± 239.08	0.530
90-Day Readmission Rate, mean ± SD	1.71 ± 1.50	1.08 ± 0.95	0.258
1-Year Complications			
-Hematoma/Fluid Collection, % [n]	16.7 [1]	41.7 [5]	0.289
-Bacterial Infections, % [n]	16.7 [1]	25.0 [3]	0.688
-Pleural Effusion/Atelectasis, % [n]	0	8.3 [1]	0.467
-Wound Dehiscence, % [n]	0	8.3 [1]	0.467
-hydronephrosis, % [n]	0	8.3 [1]	0.467
-Bile Leak, % [n]	0	8.3 [1]	0.467
-Cholestasis, % [n]	16.7 [1]	0	0.146
-Graft Rejection, % [n]	0	0	-
3-Year Death-Censored Liver Graft Survival (m), % [n]	100 [7]	100 [13]	-
3-Year Death-Censored Kidney Graft Survival, % [n]	100 [7]	92.3 [12]	0.463
3-Year Patient Survival, % [n]	85.7 [6]	84.6 [11]	0.871

EFFICACY, AND SAFETY OF RADIOFREQUENCY ABLATION OF THYROID NODULES. THE LARGEST NORTH AMERICAN EXPERIENCE

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Background: Although, thyroid lobectomy is the standard treatment for symptomatic benign thyroid nodules, it is associated with multiple postoperative adverse events. Since radiofrequency ablation was approved by the Food and Drug Administration a year ago, it gained popularity as an alternative to traditional surgeries for management of thyroid nodules in the United States waiving the downsides of traditional surgeries

Objective: to evaluate effectiveness, complications of radiofrequency ablation in patients with benign thyroid nodules

Methods: Institutional review board approval was obtained for this prospective cohort study. We included thyroid nodules treated with RFA at Tulane medical center, from July 2019 through October, 2021. Nodule volume, thyroid function, and complications were evaluated.

Results: A total of 195 nodules, and 180 patients were treated. The mean and SD of the energy used was 25±10 The median and IQR of patients age was 65 (54, 70) years, and 140 patients were females. The median, and IQR pre-treatment nodule volume was 3 (1, 9 CC). The Volume reduction rate (VRR) at the 1 , 3, 6, and 12 months were 53.11±2.01, 69.64±2.53, 65.56±4.96, and 59.14±9.36, P <0.001. respectively. TSH were assessed before, and following ablation. All patients remained euthyroid following ablation. Only patient developed temporary hoarseness of voice following RFA. Regression analysis revealed that the patient's demographics nor the nodule's characteristics will affect the VRR ($p > 0.05$)

Conclusion: This is the largest study reporting the RFA experience of the North American population. Our study showed that RFA is a safe alternative modality to treat benign thyroid nodules while preserving thyroid function and avoiding surgical complications associated with conventional surgeries.

Surgical Potpourri | Abstract | Clinical Science | Transplant

OUTCOMES OF SIMULTANEOUS KINDEY PANCREAS TRANSPLANTATION IN PATIENTS WITH TYPE-1 AND TYPE-2 DIABETES MELLITUS

Hosein Shokouh-Amiri, Sana Badar, Muhammad S. Naseer, Donnie Aultman, Robert McMillan, Srijan Tandukar, Neeraj Singh, Gazi B. Zibari, Willis Knighton Health System

Background: UNOS approved simultaneous kidney-pancreas transplantation (SKPT) for type-II diabetes mellitus (DM) in Oct 2014. In Jan 2015, we actively listed type-II DM patients with ESRD or e-GFR ≤ 20 ml/min/m2 for SKPT if they met the following criteria: age < 55 years, on insulin ≤ 1 unit/kg body weight, and a maximum allowable body mass index (BMI ≤ 30 kg/m2). The two major advantages for the type-II DM patients receiving SKPT as compared with kidney transplant alone are a much shorter waiting time and usually a better-quality kidney. There are limited data comparing outcomes of SKPT in type-I versus type-II DM. The aim of this study was to measure the change in volume of SPKT since UNOS approved it for type-II DM patients and compare death-censored 5-year graft and patient survival between type-I and type-II DM patients undergoing SKPT.

Objective: The aim of this study was to measure the change in volume of SPKT since UNOS approved it for type-II DM patients and compare death-censored 5-year graft and patient survival between type-I and type-II DM patients undergoing SKPT.

Methods: We conducted a retrospective chart-review study on SKPT patients from Jan 2010 to Nov 2020 and collected data on patient demographics such as age, gender, and race. BMI, c-peptide, HbA1c, and e-GFR were noted pre-transplant and 1-year post-transplant. Outcome variables included volume of SKPT pre-and post-approval of SKPT for type-II DM patients, death-censored 5-year pancreas and kidney grafts, and 5-year patient survival. Student's t-test for continuous variables, Chi-square test for categorical variables, and Mantel-Cox test for survival analysis was done using SPSS.

Results: As compared to type-I DM patients, type-II DM patients were older [47.4 vs 40.2 years, p-value = <0.01] and had higher BMI [32.0 vs 26.7 kg/m2, p-value = <0.01] and eGFR [76.7 vs 62.0 ml/min/1.73m2, p-value = 0.04] 1-year post-transplant. Among 89 SKPT, 18 (all type-I DM) were done before the approval of SKPT in type-II DM patients and 71 (41 type-I and 30 type-II DM) were done after the approval. This translated to an increase in SKPT from 3.6/year to 11.8/year (228% increase). There were no differences in death-censored 5-year kidney and pancreas grafts survival and 5-year patient survival.

Conclusion: UNOS approval of SKPT for T2DM led to an increase in SKPT with no differences in graft or patient survival between T1DM and T2DM patients. Weight gain should be carefully monitored and managed post-transplant in SKPT T2DM recipients.

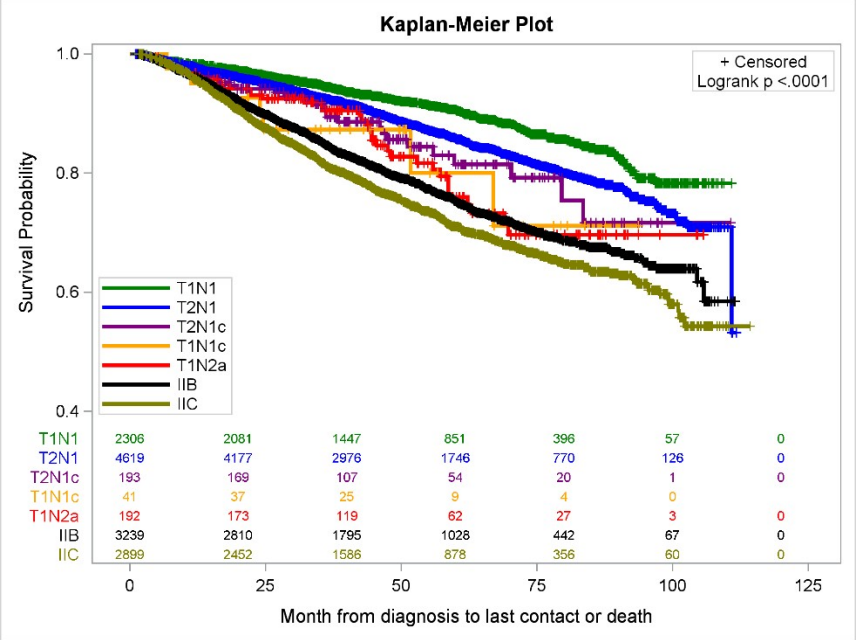


Table 1: Results

	DM type-I (n=59)	DM type-II (n=30)	P-value
Age (Y), Mean ± SD	40.2 ± 9.5	47.4 ± 8.8	<0.01
Male, % (N)	62.1 (36)	61.3 (19)	0.94
African American, % (N)	58.6 (34)	64.5 (20)	0.79
BMI (kg/m^2), Mean ± SD			
-Pre-Tx	25.9 ± 4.2	27.0 ± 2.8	0.15
-1-year post-Tx	26.7 ± 4.6	32.0 ± 3.7	<0.01
C-peptide (ng/ml), Mean ± SD			
-Pre-Tx	0.4 ± 0.8	5.7 ± 5.8	<0.01
-1-year post-Tx	3.7 ± 2.1	4.8 ± 3.1	0.11
HbA1C (%), Mean ± SD			
-Pre-Tx	7.9 ± 0.9	7.5 ± 2.5	0.67
-1-year post-Tx	5.2 ± 0.4	5.33 ± 0.4	0.42
e-GFR (ml/min/1.73m^2), Mean ± SD			
-Pre-Tx	13.0 ± 8.0	13.6 ± 9.3	0.83
-1-year post-Tx	62.0 ± 18.6	76.7 ± 22.6	0.04
Volume of SKPT before UNOS approval, % (N)	100 (3.6/year)	0 (0/year)	-
Volume of SKPT after UNOS approval, % (N)	57.7 (6.8/year)	42.3 (5.0/year)	-
Death-censored 5-year kidney graft survival, % (N)	84.7 (50)	93.3 (28)	0.63
Death-censored 5-year pancreas graft survival, % (N)	88.1 (52)	93.3 (28)	0.65
5-year patient survival, %	94.9 (56)	90.0 (27)	0.27

B-CELL LYMPHOMA 2/MICRORNA-497 GENE EXPRESSION RATIO PREDICTS METASTASIS IN COLORECTAL CANCER: A PROPENSITY-MATCHED COHORT ANALYSIS

Shahad W. Kattan, Eman A. Toraih, Manal S. Fawzy, Salwa Faisal., Tulane School of Medicine

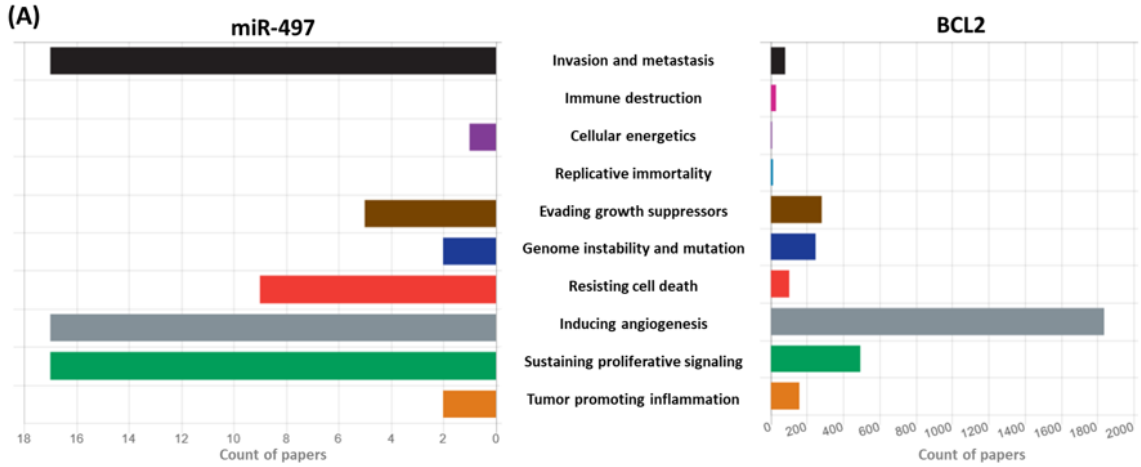
Background: Deregulated microRNAs (miRs) have a great impact on cancer development and progression. Our in silico analysis revealed that miR-497 and its target gene B-cell lymphoma-2 (BCL2) could be related to poor cancer outcomes.

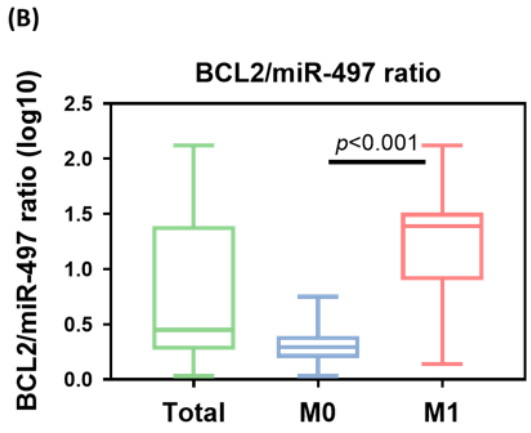
Objective: To investigate the BCL2/miRNA-497 expression ratio in colorectal cancer (CRC) and explore its association with the clinicopathological characteristics and CRC prognosis.

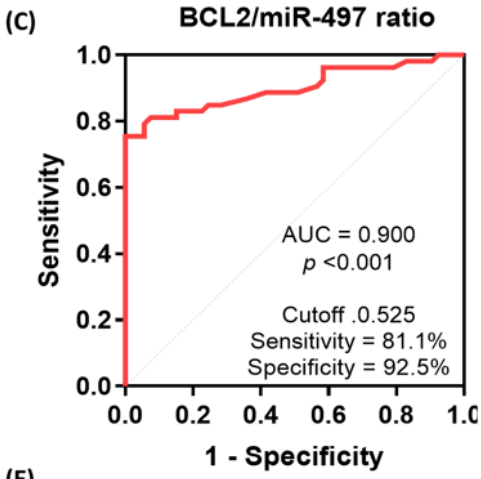
Methods: Archived samples from 106 CRC patients were enrolled. MiR-497 and BCL2 gene expressions were detected by Taq-Man Real-Time quantitative polymerase chain reaction in propensity-matched metastatic and non-metastatic cohorts after elimination of confounder bias.

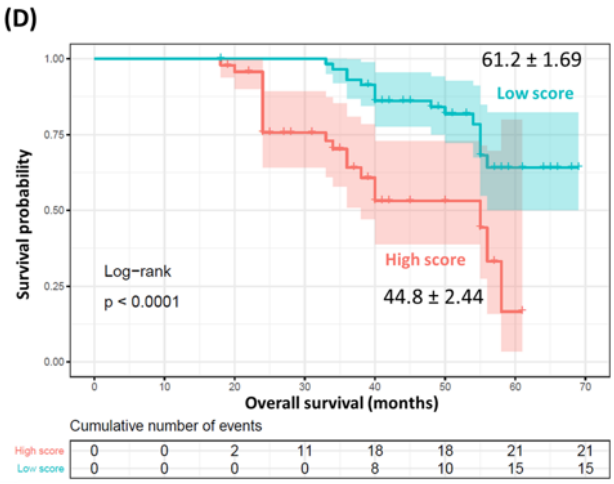
Results: BCL2 gene was upregulated in metastatic samples (median=1.16, 95%CI=1.09-1.60) compared to non-metastatic (median=1.02, 95%CI=0.89-1.25, $p<0.001$). In contrast, lower levels of miR-495 were detected in specimens with distant metastasis (median=0.05, 95%CI=0.04-0.20) than non-metastatic samples (median=0.54, 95%CI=0.47-0.58, $p<0.001$). Estimated BCL2/miR-497 ratio yielded a significant differential expression between the two cohort groups. Higher scores were observed in metastasis group (median=1.39, 95%CI=0.9-1.51) than non-metastatic patients (median=0.29, 95%CI=0.19-0.39, $p<0.001$). Receiver operating characteristic curve analysis showed BCL2/miR-497 ratio score to have the highest predictive accuracy for metastasis at presentation. The area under the curve was 0.90 (95%CI=0.839-0.964, $p<0.001$) at cutoff of >0.525, with high sensitivity 81.1% (95%CI=68.6%-89.4%) and specificity 92.5% (95%CI=82.1%-97.0%). Also, the ratio score was negatively correlated with disease-free survival ($r = -0.676$, $p<0.001$) and overall survival times ($r = -0.650$, $p<0.001$). Kaplan-Meier curves showed lower survival rates in cohorts with high-score compared to low-score patients.

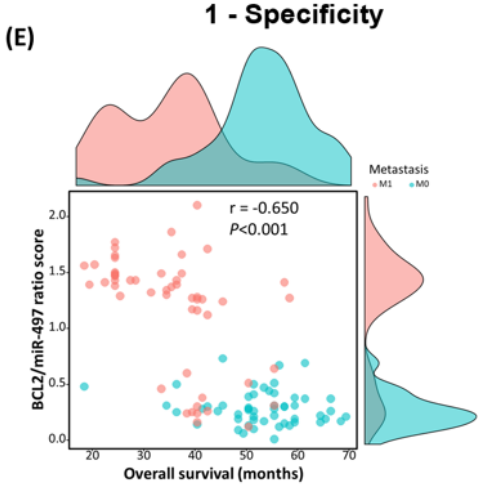
Conclusion: The BCL2/miR497 expression ratio is associated with poor CRC prognosis in terms of metastasis and short survival.


(A)
miR-497
Count of papers
BCL2
Invasion and metastasis
Immune destruction
Cellular energetics
Replicative immortality
Evading growth suppressors
Genome instability and mutation
Resisting cell death
Inducing angiogenesis
Sustaining proliferative signaling
Tumor promoting inflammation
Count of papers


(B)
BCL2/miR-497 ratio
BCL2/miR-497 ratio (log10)
p<0.001
Total
M0
M1


(C)
BCL2/miR-497 ratio
Sensitivity
1 - Specificity
AUC = 0.900
p <0.001
Cutoff .0.525
Sensitivity = 81.1%
Specificity = 92.5%


(D)
61.2 ± 1.69
Low score
High score
44.8 ± 2.44
Log−rank
p < 0.0001
Survival probability
Overall survival (months)
Cumulative number of events
High score 0 0 2 11 18 18 21 21
Low score 0 0 0 0 8 10 15 15


(E)
Metastasis
M1
M0
r = -0.650
P<0.001
BCL2/miR-497 ratio score
Overall survival (months)

REGIONALIZATION AND SOCIOECONOMIC FACTORS THAT AFFECT THE RECEIPT OF THERAPY AND MODALITY OF TREATMENT IN HEPATOCELLULAR CARCINOMA CONTRIBUTE TO POORER OUTCOMES

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Background: Hepatocellular carcinoma (HCC) is an aggressive malignancy that is often diagnosed late and not curable due to tumor burden and underlying severe liver disease. Although surgery is the mainstay of treatment, varied combinations of treatment modalities are chosen in specific centers, including radiofrequency or microwave ablation, transarterial chemoembolization, radioembolization, immunotherapy/chemotherapy, and liver transplantation. Individual patient outcomes vary based on differential tumor biology, patient demographics, clinicopathologic variables, and hospital-system and treatment-related factors. The impact of socioeconomic factors on treatment outcomes is a subject of intense current interest. Substantially higher death rates for HCC and related cancers occur in the South including Louisiana.

Objective: Our study aimed to investigate the socioeconomic factors associated with receipt of specific interventions for HCC. We also aimed to investigate if regionalization affects the modality and receipt of stage-appropriate care.

Methods: Under an IRB-approved protocol, we queried the Surveillance, Epidemiology, and End Results (SEER) database for patients 18 years of age or older diagnosed with hepatocellular carcinoma from 2007-2016. HCC patients were classified based on type of intervention received including surgical intervention, chemotherapy, radiotherapy, combination, and no intervention. Chi-square analysis was utilized to analyze the difference between the groups. Socioeconomic and clinicopathologic variables were correlated to factors associated with receipt of treatment. Logistic regression using stepwise selection and performing univariate and multivariate analysis were used to assess the impact of socioeconomic factors on the likelihood of receipt of treatment. All tests were two-sided and performed at the 5% significance level. Statistical analysis was performed using R-statistical analysis programming.

Results: Overall, 36982 patients were identified in the database. HCC patients were most frequently diagnosed after age 45, and males were disproportionately affected compared to females (76.1% vs 23.9%, $p<0.05$). The incidence of HCC has decreased over time (37.6% in 2007-2010 compared to 27.1% in 2014-2016, $p<0.05$). Insurance status breakdown included private insurance (55.84%), Medicaid (24.1%), Medicare (16.6%), and remainder were uninsured (3.5%). Household income was concentrated around $50,000-75,000 whereas education level was evenly distributed among the population. Distribution of intervention included chemotherapy alone (31.9%), no intervention (31.4%), surgery alone (20.1%), combination therapy (11.6%). For surgical intervention, hepatic resection was more prevalent compared to local-regional therapy. A significant majority of the population either had unknown radiation status or did not receive radiation therapy (68.8%). Patients with early presentation of HCC are more likely to receive definitively chemotherapy (OR: 1.41, CI: 1.21-1.65, $p<0.01$). Socioeconomic factors including sex, race, insurance status, income, education level and regionalization were related to the receipt and modality of treatment.

Conclusion: Socioeconomic factors including regionalization affect the modality and receipt of care for HCC patients. Patients of lower socioeconomic status are more likely to receive hepatic resection or definite chemotherapy compared to patients of higher socioeconomic status who are more likely to receive local-regional therapy. Patients diagnosed at an early stage may be cured by surgical resection or transplantation, but the majority of patients with HCC have advanced disease requiring multimodality palliative treatments to prolong survival. HCC and cirrhotic liver disease disproportionately affect disadvantaged patients. Higher mortality rates in specific regions of the country including the South may reflect not only access to care, but other factors including varying likelihood to have combined therapies, especially for later stage patients. Identification of these specific demographic and socioeconomic disparities in the population is important for developing strategies for improved outcomes in areas with higher mortality from HCC and a variety of other cancers.

HASHIMOTO THYROIDITIS AMELIORATES THE RISK OF RECURRENCE IN BRAF-POSITIVE DIFFERENTIATED THYROID CARCINOMA

Mahmoud Omar1, Yusef Buti1, Abdallah S. Attia1, Mohamed A. Aboueisha1, Lauren Mueller2, Bert Chabot2, Ruba F. Abu Alhuda1, Emad Kandil1, Mohamed A. Shama, Tulane School of Medicine

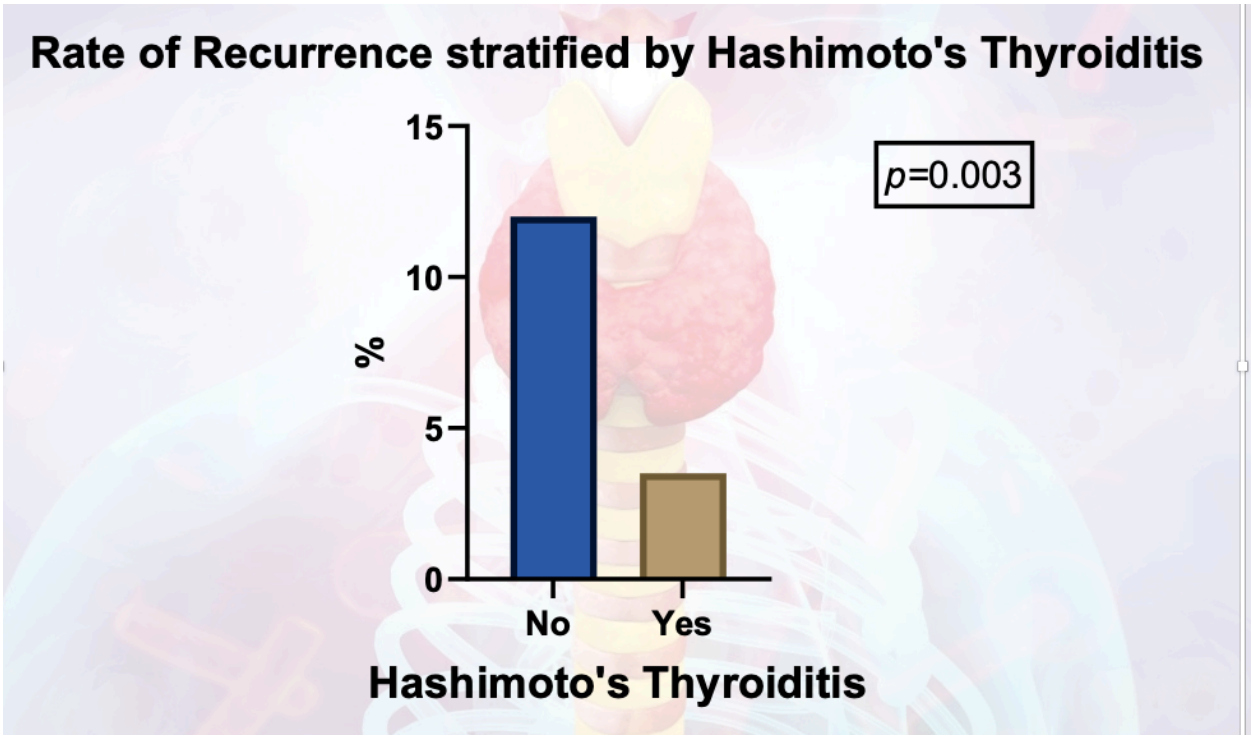
Background: Papillary thyroid carcinoma (PTC) is the most common form of differentiated thyroid cancer (DTC). The American Thyroid Association 2015 guidelines highlighted the risk of aggressive disease and the higher risk of recurrence associated with BRAF gene mutation. Many studies established that Hashimoto's thyroiditis (HT) is associated with an elevated risk of papillary thyroid cancer (PTC). When PTC develops on top of Hashimoto thyroiditis, the disease tends to be less aggressive; less lymph node and extra-thyroidal invasion.

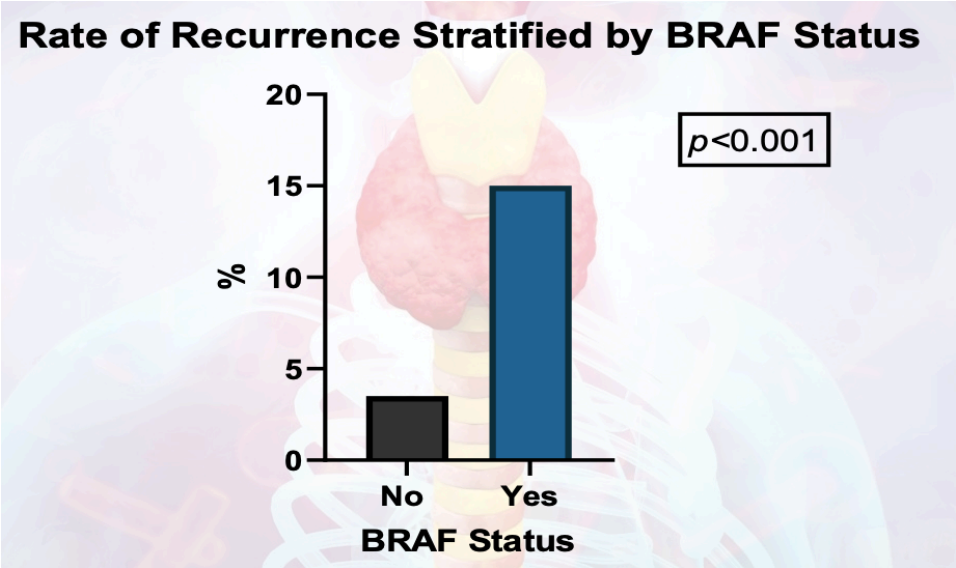
Objective: We sought to investigate the possible influence of HT on the aggressiveness and recurrence in patient with DTC among patient with mutated and wild BRAF gene

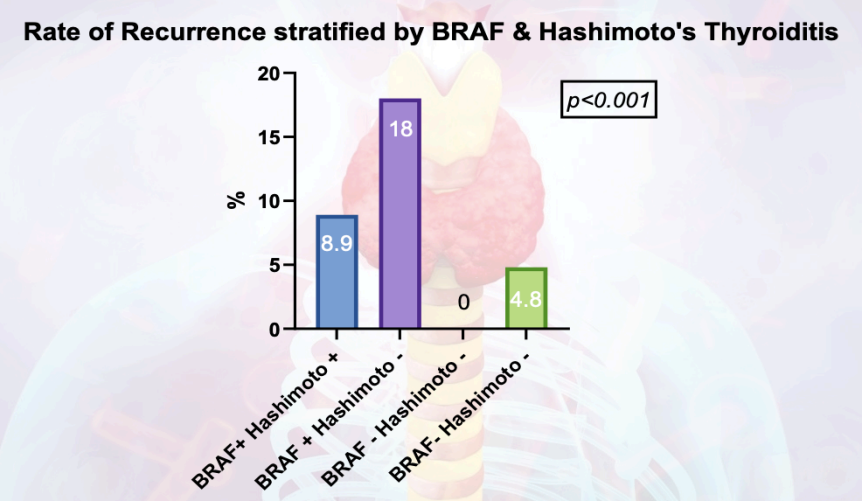
Methods: We performed a retrospective cohort study including patients with DTC who had genetic testing for BRAF mutation following thyroidectomy between 2014 and 2020. Patient demographics, underlying thyroid morbidities, surgical pathology findings, and disease recurrence were extracted. Chi-square test was used to compare between the rate of recurrence between different groups.

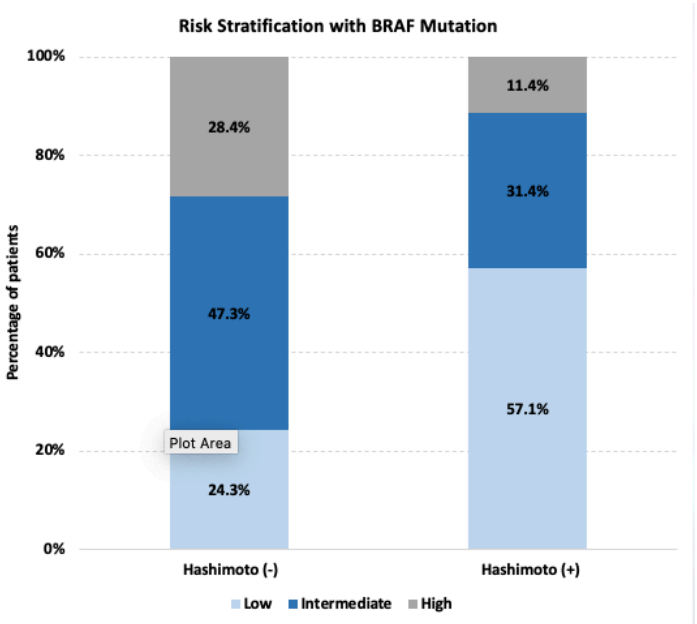
Results: A total of 320 patients were included. The mean age was 62.3 years, and the majority of our patients were female (N=242, 75.6%). Patient with HT positive and BRAF positive DTC (N=45) have a lower risk of aggressive disease compared to those with HT negative BRAF positive DTC (N=103), (11.4% vs 28.4%), p <0.01. There was a statistical diferance in The rate of recurrence in patients with BRAF positive HT negative patients (18%), BRAF positive HT positive patients (8.9%), BRAF negative HT negative patients (4.8%), BRAF negative HT positive group (0%), P < 0.01.

Conclusion: Hashimoto thyroiditis decreases the rate of recurrence in patients with DTC. No recurrence recorded in BRAF negative DTC with underlying HT. We recommend periodic follow up in patient with HT BRAF negative DTC.




Rate of Recurrence Stratified by BRAF Status
20
15
10
5
0
%
p<0.001
No
Yes
BRAF Status


Rate of Recurrence stratified by BRAF & Hashimoto's Thyroiditis
20
15
10
5
0
%
p<0.001
8.9
18
0
4.8
BRAF+ Hashimoto +
BRAF + Hashimoto -
BRAF - Hashimoto -
BRAF- Hashimoto -


Risk Stratification with BRAF Mutation
100%
80%
60%
40%
20%
0%
Percentage of patients
28.4%
47.3%
24.3%
11.4%
31.4%
57.1%
Plot Area
Hashimoto (-)
Hashimoto (+)
Low
Intermediate
High

A SINGLE INSTITUTION COMPARISON OF FAMILIAL VERSES SPORADIC PANCREAS CANCER

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Background: Known susceptibility genes have been identified to explain many cases of familial pancreas cancer (FPC). However, FPC represents only 5-10% of newly diagnosed cases, and little is known about the natural history of FPC when compared to sporadic pancreatic cancer (SPC).

Objective: We sought to compare the natural history of FPC vs. SPC at a single community cancer center over a 10-year period.

Methods: We queried the tumor registry at Our Lady of the Lake-Mary Bird Perkins Cancer Center for all patients treated for PAC from 2010-20. Patients with missing family history data were excluded, and genetic testing results did not exist for most patients and therefore could not be used to define FPC. FPC was defined as having one or more 1st degree relatives (FDR) or one or more 2nd degree relatives (SDR) with PAC. Additionally, we analyzed patients with a family history of a 1st or 2nd degree relative with non-pancreas cancer as well. We compared demographics, stage, treatment and outcomes between those with familial or sporadic history of pancreas cancer. SAS Studios and STATA statistical software were used to analyze the dataset through descriptive, binary, and logistic regressions.

Results: We identified 629 PAC patients 2010-2020. 506 were eligible for analysis following exclusions. Mean age of patients diagnosed was 68.8. 250 (49.41%) were male; and 341 (67.39%) were white. 63 (13.15%) were diagnosed with stage I disease, 139 (29.02%) stage II, 58 (12.11%) stage III, 216 (45.09%) stage IV. 130 (25.69%) had surgical treatment. Of 506 patients eligible for analysis, 46 (9.1%) had FPC - 37 (7.3%) with FDR, and 10 (1.9%) had SDR with pancreas cancer. 1 (0.002%) had > 1 FDR with pancreas cancer. There were no significant differences noted between patients with FPC and those with SPC in mean age at diagnosis, gender, stage, year of diagnosis, or treatment. However, FPC patients had a higher proportion of body/tail lesions than SPC patients (47.37% vs. 31.08%, p-value: 0.04), and distal location was the only factor found to be an independent predictor of FPC (p-value: 0.0459). White race (p-value: 0.0048) and cancer treatment (vs. no treatment, p-value: 0.0058) were predictive of having a family history of non-pancreatic cancer. Median overall survival was similar between sporadic and familial PAC (6.33 months vs. 6.23 months, p = 0.67).

Conclusion: Despite using a very liberal definition of FPC, we found that only 9.1% had FPC indicating its rarity in a community setting. FPC cases presented more frequently with lesions in the body/tail, but FPC and SPC seen to have very similar presentations, natural histories, and outcomes.

SEXUAL DISPARITIES IN THE RISK OF A SECOND PRIMARY THYROID CANCER AFTER SURVIVING A MALIGNANCY: A PARADOXICAL THREAT

Muhib Haidari, BS, Lauren Mueller, BA, Lily Trinh, MD, Eman Toraih, MSci, MD, PhD, Mohammad H. Hussein, PhD, Emad Kandil, MD, MBA, Tulane SOM

Background: Despite the extensive research on sex differences in the incidence of thyroid cancer, there is a lack of data on the role of sex in developing second primary thyroid cancer.

Objective: We aimed to determine the incidence of SPTC in women compared to men and analyze different age groups within each gender to determine their risks of SPTC after having a specific primary malignancy.

Methods: Cancer survivors diagnosed with SPTC from 1975 to 2016 were identified from the Surveillance, Epidemiology, and End Results (SEER) database (SEER 18 Registry). All primary cancer sites were identified using the multiple primary standardized incidence ratios (MP-SIR) session. A multivariate Cox proportional regression hazard analysis evaluated all the risk factors.

Results: Data for 9,730 (62.3%) women and 5,833 (37.7%) men were enrolled in the final analysis out of 15,620 STPC individuals. Among the different population groups, Asian/Pacific Islanders had the highest incidence of SPTC (SIR = 2.67, 95%CI = 2.49–2.86). Across all age groups, the risk of SPTC was higher in men (SIR = 2.01, 95%CI = 1.94–2.08) compared to women (SIR = 1.83, 95%CI = 1.79–1.88). Head and neck tumors had significantly higher SIRs for SPTC among men in comparison to women (floor of mouth: SIR = 4.27 vs. 1.75, gum: SIR = 4.47 vs. 2.2, tonsil: SIR = 2.61 vs. 0.52, pharynx: SIR = 4.27 vs. 1.18, larynx: SIR = 4.03 vs 2.01, eye and orbit: SIR = 4.6 vs. 2.56, and nasal cavity and middle ears: SIR = 6.34 vs. 2.53). The most significant difference among the genders and age groups was with acute lymphocytic leukemia (ALL). The age group of five years and younger had the highest SIR difference (SIR of 26.7 in boys and 15.2 in girls), and ALL (SIR = 31.6 in boys and 5.09 in girls) accounted for the most common tumor in that age group. The SIR was almost double (SIR = 6.62 in males vs. 3.47 in females) in the under 25 age group.

Conclusion: Despite the higher prevalence of thyroid cancer in female populations than males, the risk of SPTC was higher in men than women across all age groups. Possible explanations include heightened surveillance in men with previous malignancies or gender-specific genetic susceptibility to advanced malignancies. Men may need close monitoring after a diagnosis of a primary tumor.

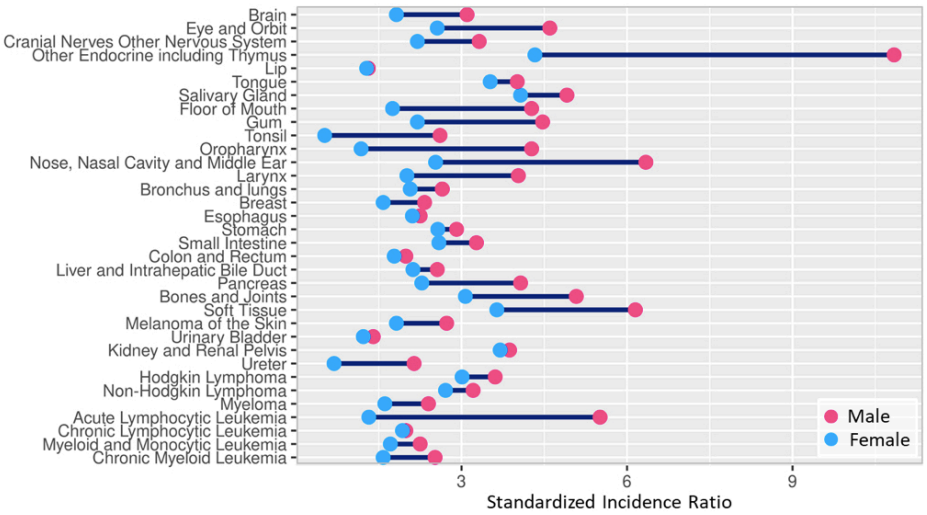

Fig. 1. Risk of developing SPTC according to primary malignancy and identified sex. SIR: standardized incidence ratio (observed/expected).