

• ABSTRACTS FROM SCIENTIFIC FORUM •



**Symptomatic Macromastia and Lost Productivity in the Workplace**

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**Introduction:** Women with symptomatic macromastia complain of back and neck pain. Such symptoms are responsible for a significant number of lost work days per year.

**Method:** Working women with symptomatic macromastia were requested to prospectively record the number of days lost from work as a result of back or neck pain from their large breasts during a 6 months period of conservative management, required by their medical plan. The conservative management included physical therapy, weight loss and analgesics. A reduction mammoplasty was performed in all the women following the conservative management. After surgery, they were again requested to record the number of lost work days associated with back or neck pain. Basic demographic information obtained included: age, body mass index, bra size, level of education and employment. This database was IRB approved.

**Results:** The study evaluated 112 women with symptomatic macromastia. The mean age was 31±10, the mean body mass index was 29±4, mean bra size was 38-D, 45% had a college degree or higher, and 90% had full-time employment. The mean number of lost work days was 6±3 with conservative and 1±1 with surgical management in a 6 months period (Fig. 1), a difference that was statistically significant (p<0.05). Based on

gender-specific median wage rates from the Bureau of Labor Statistics, this represents an economic loss of \$1,497 annually per woman in conservative management.

**Conclusion:** Women with symptomatic macromastia have significantly fewer days lost from work when a reduction mammoplasty is performed.

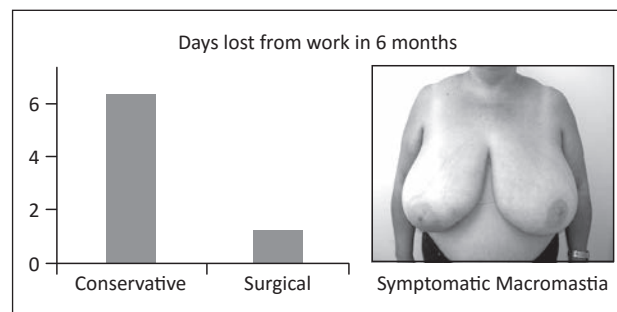


Figure 1. Lost work days

**The Effect of a Major Hurricane on the Surgical Population of the UPR-Affiliated Hospitals**

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**Introduction:** The Caribbean Islands are all regularly affected by hurricanes in a seasonal manner, but major (categories 4 and 5) hurricanes are infrequent and what happens in their aftermath is important for future planning.

**Method:** We evaluated the number and characteristics of surgical cases during 2016 and 2017 at the Surgery Database to determine what effect the category 4 hurricane, that hit Puerto Rico on September 2017, had on the surgical population. This database collects patient and procedural information from the surgical services of the University of Puerto Rico (UPR) affiliated hospitals. The study evaluated and compared cases by month using September 2017 as the reference month. The chi-square goodness-of-fit test was used to evaluate differences between months. This database was IRB approved.

**Results:** Information was available for 9,024 cases during the study period. The mean age of the group was  $49 \pm 14$  years. The gender distribution indicated that 56% were women and 44% were men. The study found a statistically significant difference in the number of surgical cases by month, with less patients in September 2017 ( $n=210$ ) compared to other months, representing a 54% decline in the number of cases, as shown on figure 1. These patients were sicker, with an increase in the number who had an ASA classification  $\geq 3$ . After three months from the natural disaster the volume of patients started to return to normal.

**Conclusion:** Major hurricanes result in a decreased volume of surgery that has prolonged effect for several months after the natural disaster.

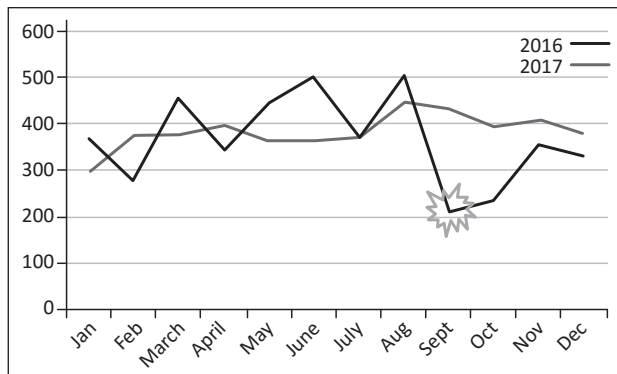


Figure 1. Number of cases per month

### Prehospital Characteristics Associated with Time Delay in Patients Admitted to the Puerto Rico Trauma Hospital (PRTH) after Hurricane Maria

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**Introduction:** The island-wide blackout, communication disruption, and damage to the infrastructure caused by Hurricane Maria affected the arrival time of patients to the hospitals. Time is related to trauma morbidity and mortality.

This study aims to evaluate prehospital management in patients admitted to the PRTH after Maria.

**Methods:** A retrospective study was performed to compare patients who arrived at the hospital within the first 2 hours after injury with those who arrived  $>2$  hours. We reviewed the records of 87 patients admitted to the PRTH from September 20, 2018, to October 31, 2018. The data included: prehospital profile, trauma mechanism, mortality, among others. Parametric and non-parametric statistics were used to evaluate the study variables. This study is IRB approved: B0030514.

**Results:** 79.3% of the patients were males with a mean age of  $42.5 \pm 17.2$  years. Trauma occurrence was more frequent in the North (25.9%) and North East (17.2%) health regions. RTCs (26.4%) and falls (26.4%) were the most common mechanisms ( $p=.057$ ). Mortality occurred in 7 subjects. ISS  $>15$  was observed in 86.4% compared to 13.6% patients who arrived in  $>2$  hours and  $\leq 2$  hours, respectively ( $p=0.007$ ). Significant time delay was observed among patients who were received from other institutions (84.6%) compared to those coming directly from the scene (15.4%), ( $p<0.001$ ). Missing documentation from paramedics was higher among those arriving  $>2$  hours (83.6%) compared to those arriving  $\leq 2$  hours (16.4%), ( $p=0.012$ ).

**Conclusion:** These findings confirm the need to develop an efficient prehospital trauma system and a disaster preparedness program in Puerto Rico.

### General Surgery Residency Program Response Plan to Hurricane Maria in Puerto Rico

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**Introduction:** Hurricane Maria has been the worst natural disaster in the history of Puerto Rico. The aftermath of the hurricane, left the island with 3.5 millions populations without power, telecommunications and water. Only 9 of 107 hospitals were able to provide services. The surgery residency program at the University of Puerto Rico developed a crisis management protocol (CMP) to be implemented before, during and after the natural disaster.

**Methods:** The proposed CMP had the goal of ensuring continuity of service, maintaining quality of care and using minimal resources. In order to implement the CMP and achieve our goals, we had to create a communication network. The institution provided food and housing resources for residents. Emotional and psychological support was available for all residents. We evaluated the compliance with ACGME rules and policies and the number of cases per residents.

**Results:** All residents complied with ACGME duty hours policy. Two residents took leave of absence due to personal situations. Residents were also involved in systematic and administrative

contingence plans at the different residency program affiliated hospitals. Several residents were involved in outreach activities including developing partnerships with private entities for collection of medical supplies donations for our patients. All residents participated from coping crisis workshops by psychiatry and the medical education guidance departments. Overall, there was no difference in the average number of cases performed by residents.

**Conclusion:** Having an effective CMP helped our program to stay organized and functioning during a natural disaster.

#### Quality Improvement in General Surgery: Implementation of a New Case Logging Tool

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**Introduction:** Gathering and reporting case data has been a time-consuming task. Accurate and timely case logging is essential, yet not so easily obtainable. In order to address this issue, a new case logging tool (CLT) was developed. Case logging was standardized, while generation of reports was automated.

**Methods:** Data collected at the Surgery Database during 2015 (CLT not used) was compared to that of 2017 (CLT used). The following variables were analyzed: number of cases, age, gender, body mass index (BMI), surgical outcome, and presence of conditions such as diabetes, hypertension, and nicotine dependence. This database was IRB approved. Residents were surveyed regarding whether the CLT was easier and faster.

**Results:** The mean age of the groups  $49.5 \pm 22.0$  vs.  $49.9 \pm 22.4$  was not significantly different. The groups were also similar in gender, BMI and surgical outcome; however, after implementation of the CLT a significantly higher frequency of change of outcome, diabetes, smoking and hypertension were documented (table 1). Residents indicated the new CLT was overall better than the previous method.

	n	Males	BMI	Minor	Major Morbidity	Mortality Morbidity
2015	4,573	44%	27.1	1.7%	1.0%	0.6%
2017	4,424	44%	28.5	2.3%	1.4%	0.6%
P		>.05	>.05	>.05	>.05	>.05

	Outcome Change	Diabetes	Smoking	Hypertension
2015	0.45%	22.7%	9.0%	45.9%
2017	0.81%	24.5%	11.1%	48.3%
P	<.05	<.05	<.05	<.05

**Conclusion:** Implementation of the new data gathering tool resulted in a more accurate report of outcome changes and pre-existing conditions such as diabetes, smoking and hypertension. Residents considered the new tool overall better.

#### First National Report of Triple Negative Breast Cancer in Puerto Rico: A Comprehensive Analysis of Cancer Registry Data from 2010-2012

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**Introduction:** Triple negative breast cancer (TNBC) is an important breast cancer subtype associated with worse prognosis. At present, there is no information regarding the incidence of TNBC in Puerto Rico (PR). To fill this gap, we determine the incidence of TNBC in PR, and described the clinical and pathological characteristics of the population. We hypothesize that the incidence of TNBC in PR is similar to the Hispanic population in the United States (US).

**Methods:** Under an IRB-approved protocol, we retrospectively review demographic, clinical, and pathological characteristics for TNBC cases in the PR Cancer Registry database from 2010 to 2012. The incidence of TNBC in PR was compared to national US reports for the Hispanic population.

**Results:** We found that 14% of women diagnosed with breast cancer for the study period were diagnosed with TNBC, which is higher than 11.8% to 13% reported in US Hispanic women. The majority 60.9% were diagnosed after 55 years. Most cases were from the metropolitan area 27.4%. Based on staging: 57.6% localized, 35.9% regional, and 6.5% distant. Histological distribution showed: 80.2% ductal, 4.7% lobular and 15.1% other. More cases underwent partial (46.7%) than total mastectomy (43.1%). Chemotherapy was administered to 69.8%, and radiotherapy to 55.2% of cases.

**Conclusion:** The incidence of TNBC in PR is higher than US Hispanics. There is a need for prospective studies to understand the epidemiological, clinical and biological characteristics that promote a higher incidence. To the best of our knowledge, this is the first population-based report on TNBC in PR.

#### Tailored Step-Up Approach for the Treatment of High Grade Carotid Stenosis

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**Introduction:** We describe outcomes of patients with high grade carotid stenosis (HGCS) treated with a tailored step-up approach that favors carotid artery stenting (CAS) over carotid endarterectomy (CEA) in the proper setting.

**Methods:** Starting January 2011, a retrospective review of all patients (4-year period) diagnosed with HGCS ( $\geq 70\%$ ) at our institution was performed. Patients were either treated with a CAS centered step up approach or direct CEA. The following were absolute criteria to obviate the step-up approach: 1) highly unsuitable anatomy by non-invasive imaging and or recent stroke ( $\leq 14$  days). If these criteria were not met, we would proceed with a step-up approach with selective arteriogram to determine candidacy for CAS. Patients with a history of prior disabling stroke or chronic atrial fibrillation were excluded. Primary endpoints were as follow: 1) peri-operative morbidity/mortality, and 2) restenosis at intermediate term follow-up. The PHSU-IRB approved this study.

**Results:** Overall, 246 patients were treated of which 103 underwent a step-up approach. Of the latter 67/103 (65%) underwent CAS and 36/103 (35%) were unsuitable for CAS. A total of 179 CEA were performed. For CAS, 30-day perioperative stroke, MI, death rates were 0, 0, 1.5%, respectively. For CEA, the latter 30-day outcomes were 1.7%, 0%, 0%, respectively. At 2 years, no patients in either group had restenosis that merited reintervention.

**Conclusion:** A tailored step up approach with selective arteriogram has expanded our selection criteria for CAS and has resulted in favorable outcomes when compared to major US registries in the setting of HGCS.

### The Impact of a Rapid Imaging Protocol in Acute Cholecystitis

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**Introduction:** In this study, we assess the clinical impact of a "rapid imaging protocol" (RIP) in patients with acute cholecystitis (AC).

**Methods:** From January 2017 to January 2018 (one year period), a prospective study was implemented using a RIP with HIDA or CT scan (first available, goal within 4 hours) in patients (n=52) presenting with highly suspected AC (see Figure 1). The historical control was all patients admitted with suspected AC in a 1.5-year period (n=117) under our previous "delayed imaging protocol" (DIP), which used US +/- HIDA (post-admission) in select patients. Primary end points included: compare outcome

measures between the groups, evaluate diagnostic imaging performance for AC, and validate our proposed clinical feature score in the setting of AC. The study was approved by Ponce Health Science University IRB.

**Results:** Histopathologic features consistent with acute cholecystitis (AC) was more frequent in patients in the RIP (64% vs 39%,  $p=0.008$ ). The positive predictive value of HIDA and CT scan for AC were 85% vs 94%, respectively. The RIP was associated with a significant reduction in time to surgery, length of stay, and conversions to open ( $p<0.001$ , respectively). A clinical feature score of 3.5 predicted the likelihood of AC in 95% of the cases ( $\chi^2$  for linear trend = 42,  $p<0.001$ ).

**Conclusion:** A protocol centered around rapid identification, defined clinical criteria (i.e. clinical feature score), and confirmation with non-user dependent imaging modalities has resulted in favorable outcomes in the setting of AC.

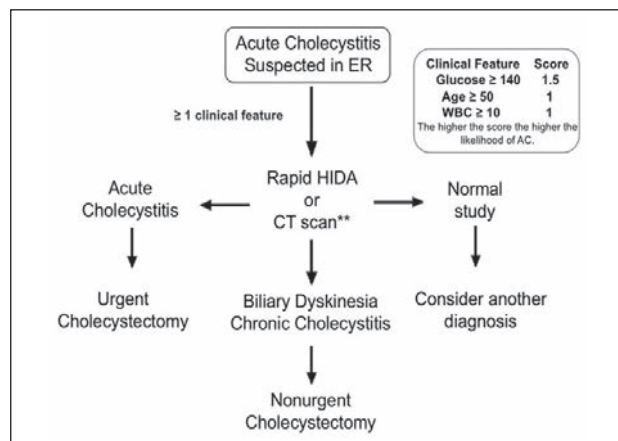


Figure 1. Rapid imaging protocol for acute cholecystitis.

### Is Spasticity a Risk Factor of Complications and Surgical Outcome in the Management of Early-Onset Neuromuscular Scoliosis with a Rib-Based Growing System?

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**Introduction:** Early-onset neuromuscular scoliosis is particularly difficult to treat and usually accompanied by a high rate of complications. Purpose of this research is to evaluate if patients with spasticity have poorer surgical outcome and greater complication rate, when compared to patients with hypotonicity

treated with a Rib-Based Growing System (RBGS) due to neuromuscular scoliosis.

**Methods:** This is an IRB approved retrospective review of 131 EOS neuromuscular scoliosis patients, collected from a multicenter database, treated with a RBGS. All patients were divided in two groups: spastic & hypotonic. Pre, Intra and post-operative data were compared between both groups. Complications were reported by a standardized system (Smith et al JPO, Dec 2015).

**Results:** Cohort was divided in 32 spastics and 99 hypotonic patients; found homogeneous regarding gender, age at surgery, weight, height, pre-op Cobb & kyphosis angles, and follow-up time. Immediate post-op Cobb angle % of correction in both groups were similar (37% spastic & 40% hypotonic). However, most recent Cobb angle evaluation showed an unexpected low % of residual correction (spastic 16% & hypotonic 11%). Spastic group (25/32 = 78%) had more complications than the hypotonic group (54/99 = 55%). Most common complication were infection, device migration, death, and hardware failure. In 30% of spastic patients, severity of their complications required instrumentation removal that altered the planed course of treatment compared with 10% of hypotonic group.

**Conclusion:** Both groups did not show any difference in surgical correction. Spastic patients had more complications than those with hypotonicity in management of neuromuscular scoliosis treated with a RBGS.

#### Penile “Pearling” in the Puerto Rican Population, the University of Puerto Rico Experience

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**Introduction:** Encountering artificial penile pearls which patients have self-inserted subcutaneously into their genital region has become routine in urological practice, particularly in clinics serving inmates.

**Methods:** We retrospectively reviewed our experience between January and July 2017 encountering patients who had undergone penile pearling elsewhere and presented to our clinic for other reasons or for the management of associated complications. Herein we report patient reasons for insertion, common materials used, and complications. IRB approved.

**Results:** Over a 6-month period, 35 patients were identified with genital beads in a clinic serving between 400-500 patients, an estimated frequency of 7%. The two most common reasons for the practice included the enhancement of sexual pleasure of partners during coitus, or as a sign of membership to a certain group or gang. Common materials used for subcutaneous insertion included resin, plastic, copper wiring, toothbrush fragments, polished domino pieces, sea shells, or precious metals.

Most commonly, materials had been inserted in the subcutaneous dorsal penile shaft, either using aseptic conditions as seen in tattoo or piercing shops, as well as non-hygienic practices commonly seen in correctional facilities. Complications encountered included abscess formation, chronic pain, real or perceived sexual dysfunction, and partner discomfort during coitus.

**Conclusions:** Our experience at our public urology clinic serving correctional facilities suggests that penile pearling and self-insertion of genital beads may be increasing in popularity in this patient population. Urologists must be aware of this practice largely performed using a contaminated technique, which may be associated with significant genital complications.

#### Transumbilical Laparoscopic Appendectomy (TULAA) vs. Standard Three-Trocar Laparoscopic Appendectomy (3TA) for Non-Ruptured Appendicitis in the Pediatric Population

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**Introduction:** Appendicitis is the most common surgical emergency encountered by pediatric surgeons. Laparoscopic appendectomy has been the standard of care for its treatment for many years. Recently, there has been increased popularity of single incision laparoscopic surgery which has been considered safe to perform. The purpose of this study is to compare the short-term clinical outcomes of a modified TULAA as compared to standard three-trocar laparoscopic appendectomy (3TA).

**Methods:** After UPR IRB approval, protocol number B12301116, a retrospective chart review of 101 patients who underwent either TULAA (43) or 3TA (58) for non-ruptured appendicitis in the University Pediatric Hospital. All patients, younger than 18 years old, who were operated by four of the hospital's pediatric surgeons between October 2014 to August 2016, were included. One surgeon performed the TULAA while the other three perform 3TA. The variables studied include operative time, length of stay, development of wound infection, peritoneal abscess, wound/peritoneal hematomas, and the number of narcotic doses administered. A multivariate analysis to ensure comparability between group samples was used.

**Results:** A total of 101 patients were included in the study. Preliminary results suggest that there is no significant difference between clinical outcomes when comparing the TULAA and 3TA groups.

**Conclusion:** The trans-umbilical laparoscopic assisted appendectomy seems to have similar clinical outcomes as the standard laparoscopic appendectomy. It has lower instrument costs, improved cosmesis, and provides a safe and effective alternate method to standard appendectomy in the pediatric population.

**Traumatic Cricotracheal Separation**

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**Introduction:** Traumatic cricotracheal separation is a very rare diagnosis most likely because patients with this type of injury die at the scene. Of those who survive, some have telltale signs of laryngeal trauma that help in early diagnosis and treatment. However, for others who survive the mechanism of trauma may not be clear, signs on physical examination may be subtle, or the patient may be intubated and ventilating adequately, which may increase the chance of a missed injury and increase morbidity and mortality.

**Methods:** A search was performed by reviewing medical charts of 2012-2017 from the Trauma Center at the Puerto Rico Medical Services Administration and four cases of traumatic

cricotracheal separation were identified for discussion. This case series has been granted IRB review exemption.

**Results:** Two cases of traumatic cricotracheal separation were identified upon initial evaluation of patient at emergency room. Two other cases identified were delayed diagnoses. Clinical data on initial evaluation, airway management, surgical repair, and radiologic images were obtained from these records. Using this information, we discuss the literature concerning traumatic cricotracheal separation, its diagnosis, and management issues.

**Conclusion:** After reviewing these four cases, we discuss possible reasons for delay in diagnosis and discuss details in imaging that can help us suspect that the patient may have suffered a laryngeal injury, thus prompting further investigations. These details include telescoping of thyroid cartilage behind hyoid bone, herniation of endotracheal tube balloon into soft tissues, and identification of amorphous walls in the airway.