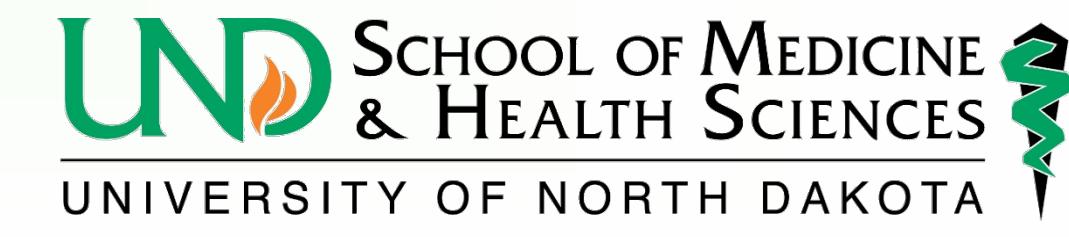


Preview: The Effect of Previous Chronic Anticoagulation Therapy on COVID-19 Patients

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INTRODUCTION

- The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic has been notable for a significant rate of morbidity and mortality worldwide.
- Characterized by severe respiratory symptoms and cardiovascular damage.
- Spread by respiratory droplets and can cause a wide range of symptoms from a mild upper respiratory infection to life threatening sepsis
- Pertinent worldwide statistics as of 06/15/21
 - Confirmed cases: 176,303,596
 - Deaths: 3,820,026
- Increasing evidence that a significant component COVID-19 pathogenesis is due to a provoked prothrombotic state
- Patients have demonstrated an increase in procoagulant factors such as fibrinogen and d-dimer levels, which has resulted in coagulopathy and increased mortality.
- Increased incidence of deep venous thromboembolism, pulmonary embolism, and microvascular thrombosis in the lungs has been proven
- The proven COVID-19 associated coagulopathy has led to various protocols that implement anticoagulation strategies as part of the treatment regimen
- Studies examining the effect of prior anticoagulation therapy on COVID-19 patient outcomes has been variable to date.
- The aim of our study is to provide further insight regarding the effect of previous anticoagulation therapy on COVID-19 patients

OBJECTIVES

- Purpose:** To determine whether COVID-19 patients who were on long term anti-coagulation prior to admission had fewer hypercoagulable events and increased overall morbidity and mortality when compared to COVID-19 patients who were not on chronic anticoagulation prior to admission.
- Hypothesis:** Hospitalized COVID-19 patients who were on chronic anticoagulation therapy prior to admission sustained less hypercoagulable events leading to less mortality than COVID-19 patients who were not on previous anticoagulation therapy.

STUDY DESIGN

- Retrospective case control study
- Compare patient outcomes in those admitted with COVID-19 who were on chronic anticoagulation on admission versus those with COVID-19 who were not on chronic anticoagulation on admission
- Variables in this study:
 - COVID-19 pneumonia
 - ICU admission
 - Number of ICU days
 - Hospital days
 - Ventilator free days
 - AKI
 - ARDS
 - VTE/PE
 - Discharge disposition
 - Discharge on oxygen,
 - Number of tracheostomy procedures
- Inclusion Criteria:
 - Patients admitted for diagnosis of COVID-19 who were on long term anticoagulation due to various co-morbid conditions
 - Those admitted for the diagnosis of COVID-19 who were not on long term anticoagulation
 - All subjects will be over 18 years of age
- Exclusion Criteria:
 - Age less than 18
 - Those hospitalized for a principal condition other than COVID-19
 - Pregnant women
- Number of subjects: 15,000 based from Sanford Health's registry.

METHODS

- Primary endpoint – whether previous chronic anticoagulation therapy is associated with less morbidity and mortality in COVID-19 patients
- Secondary endpoint – Which specific anticoagulation agent, if any, is associated with a higher or lower incidence of hypercoagulability in COVID-19 patients
- Data is currently being gathered and analyzed from the Enterprise Data Analytics

IMPLICATIONS

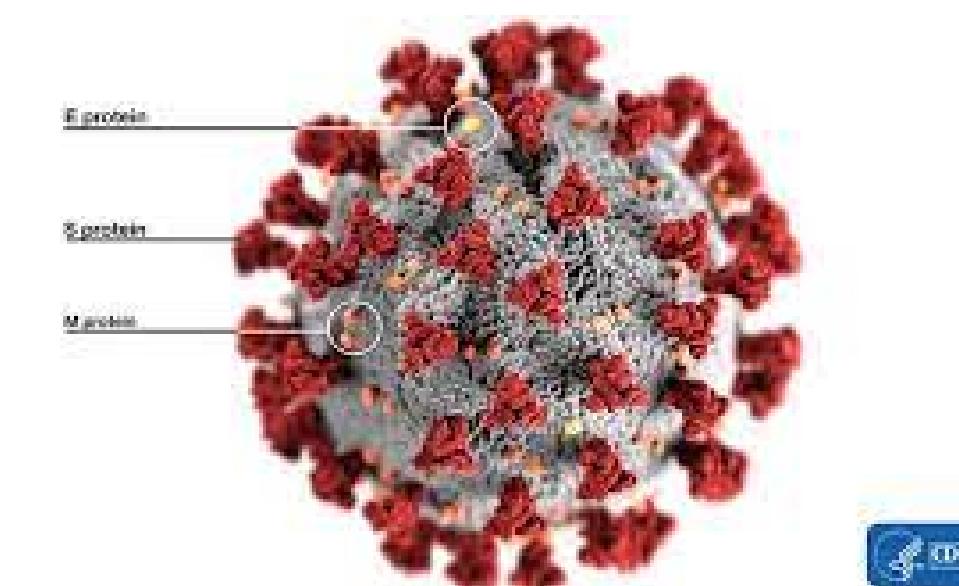
- Has the potential to aide in prognostic implications of current and future COVID-19 patients
- Will provide the groundwork for future studies into specific anticoagulation agents and their impact on COVID-19 patients

CURRENT STATUS

- Study has recently received approval from both Sanford and University of North Dakota institutional review boards as of late May 2021
- Data is currently being collected as of June 2021

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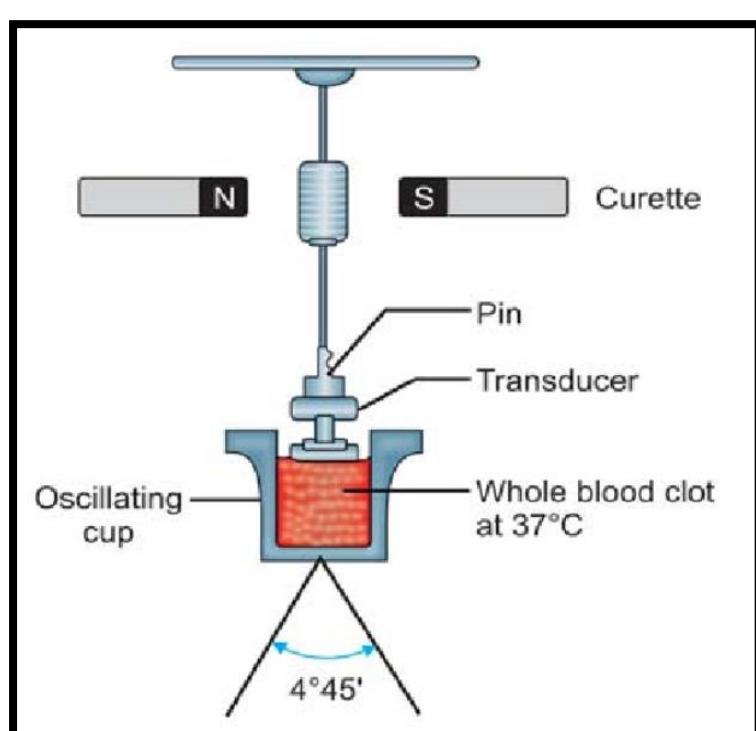
The Influence of Thromboelastography on Blood Transfusions in Major Trauma: a single institution retrospective study

Dana Nielsen, PGY II

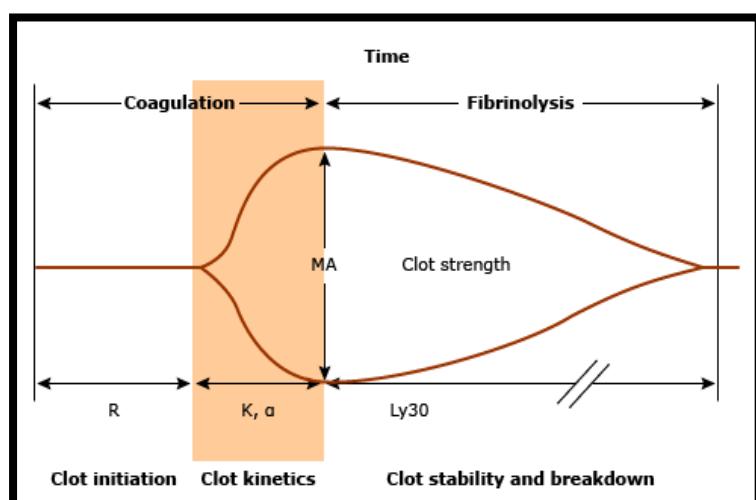
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INTRODUCTION

Coagulopathy has long been a primary concern for the trauma surgeon. Sanford Medical Center in Fargo introduced thromboelastography (TEG) to rapidly evaluate the clotting cascade on January 7th, 2020.



The severe clinical consequences of coagulopathy have spurred the search for methods to diagnose it early. Routine screening tests of activated partial thromboplastin time and prothrombin time have several shortcomings. These static, quantitative tests cannot diagnose early coagulopathy or predict bleeding.



TEG provides information on both the process of thrombosis and fibrinolysis, reflecting the quantitative and qualitative properties of clot function and generating a characteristic waveform.

QUESTIONS

Does routine TEG have an influence on blood product administration in the management of major trauma patients?

If TEG does have an influence, can that change be seen in immediate blood product administration, blood product administration over the length of the hospital course, or both?

Can these results be used to conserve the valuable resource of blood products?

METHODS

A comprehensive list of all the patients, including pediatric patients, who arrived in the SMCF Emergency Department as major traumas was obtained in the year prior to Trauma TEG, n= 220 patients.

These patients were compared to all the patients arriving to SMCF ED as major traumas in the year following instituting Trauma TEG, n= 135 patients.

The type and quantity of blood products were counted for each patient, dividing their totals into what was administered in the first 24 hours of hospitalization and the products they received in their hospital course after that initial 24 hours.

These totals were then analyzed to determine whether there was a significant difference in blood product administration, whether immediate or delayed, after the trauma TEG was instituted on January 7th, 2020..

RESULTS

Blood product administration was analyzed in two groups: in the first 24 hours after arrival and in the total hospital stay following the initial 24 hours.

The data were not normally distributed and were analyzed as continuous variables.

Wilcoxon test was used to compare the blood products before and after TEG.

All p-values are two-sided.

Analyses were performed using SAS software V9.4 (SAS Institute, Cary, NC, USA).

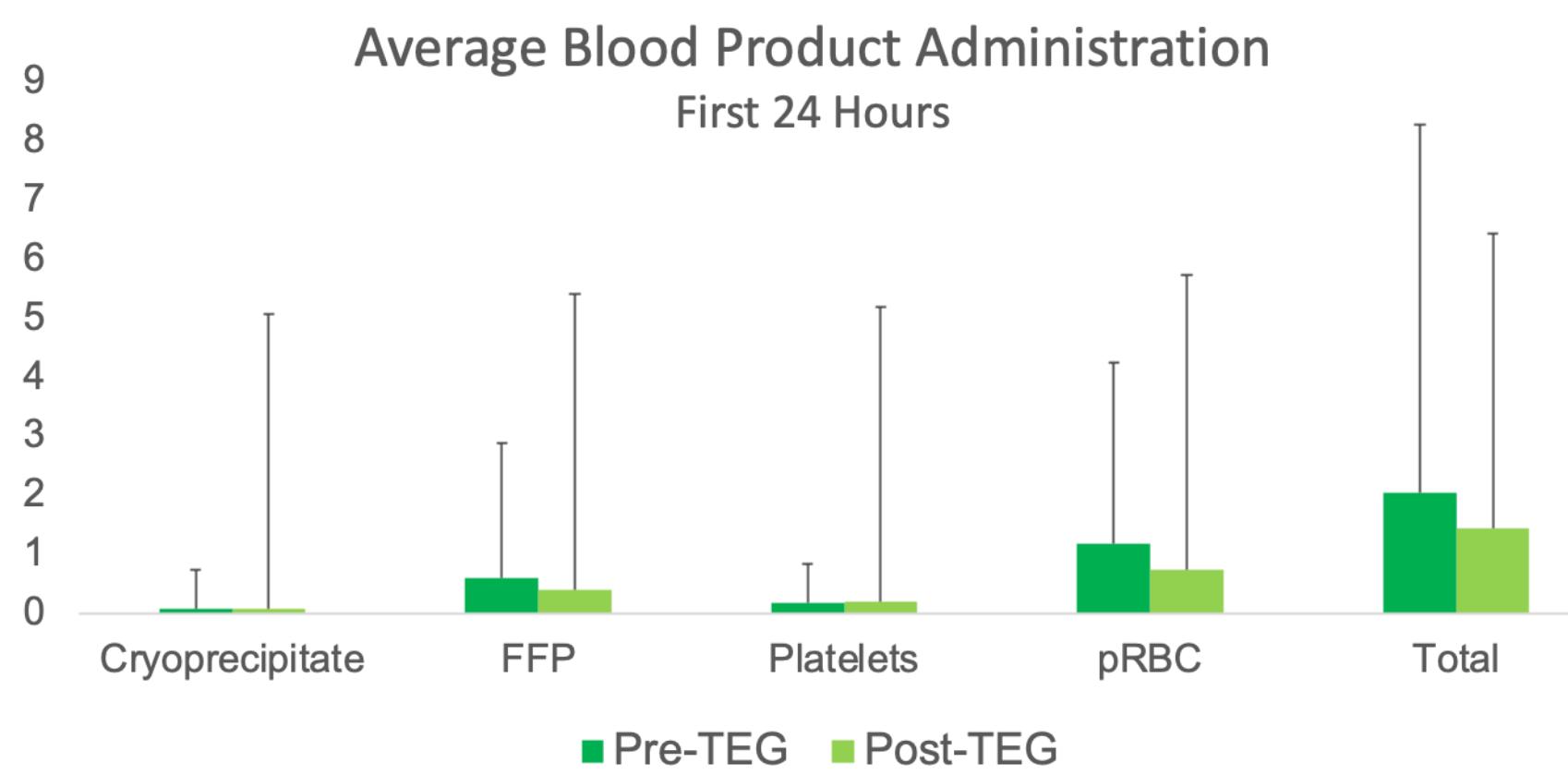


Table A: Blood product administration as individual blood products and as the total in the first 24 hours after arrival

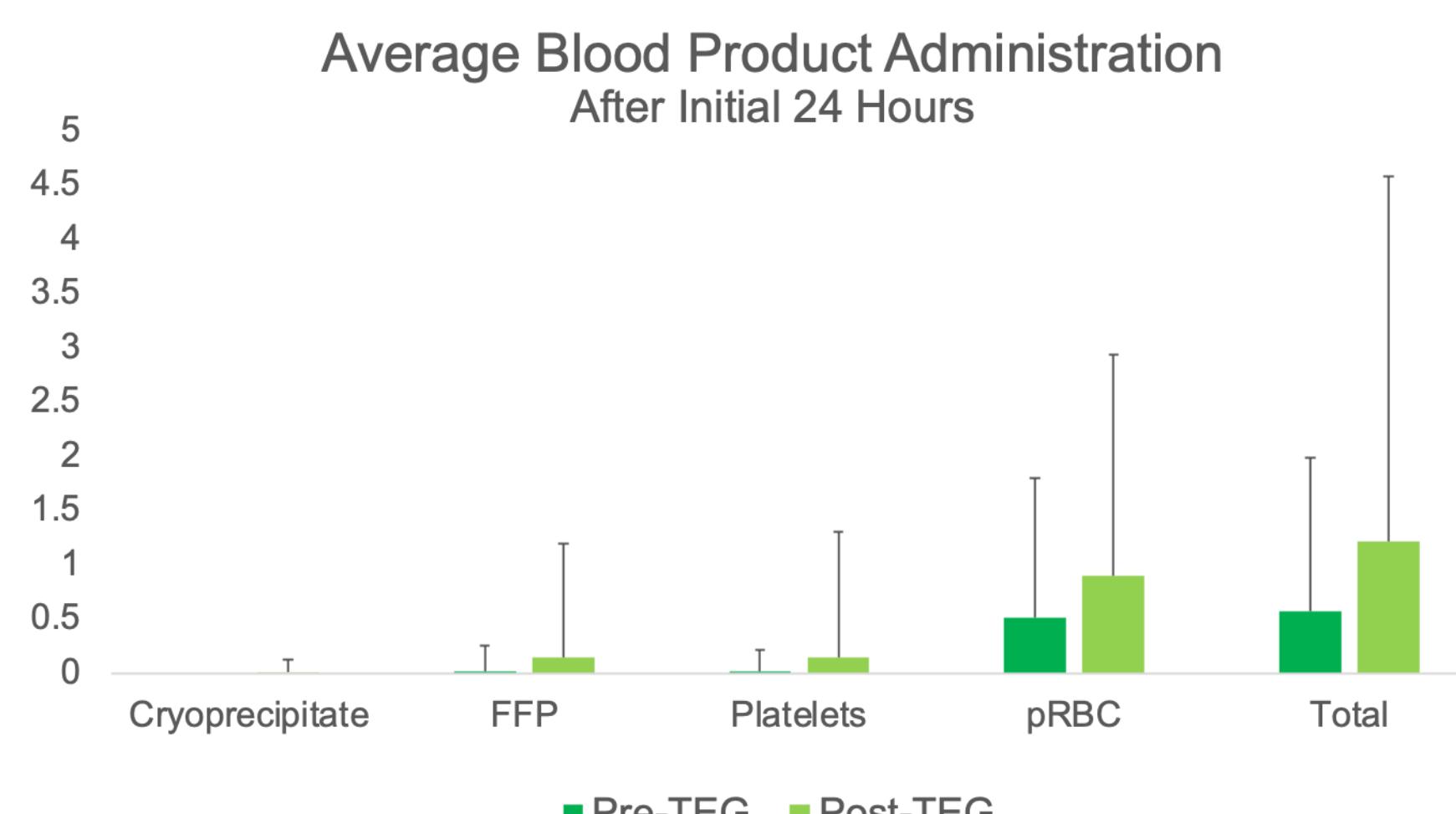


Table B: Blood product administration as individual blood products and as the total for the hospital course following the initial 24 hours after arrival

All data are presented as the mean value with standard deviation

TO CONTINUE:

Ordering TEG has the potential to be a cost-effective and clinically significant way to manage trauma patients; however, the results generated to this point are not statistically significant.

There is a greater difference in the values generated after the first 24 hours of the hospital course which may become significant with further analysis.

Possible adjustments to increase the significance of the results:

- 1) Analyzing more years of patient data (two years before and after)
- 2) Making the trauma TEG an automatic part of the major trauma lab panel
- 3) Narrowing the focus to certain types of injuries, such as MVC or farm injuries
- 4) Including demographic data and focusing only on adult patients

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THANKS TO

1. Dr. Steven Briggs
2. Dr. Abe Sahmoun
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4. Sanford IT Department

Laser Treatment Improves Unfavorable Scarring in the Setting of Breast Reconstruction and Other Breast Procedures

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Purpose

- Breast surgery has a significant positive impact on quality of life
- Hypertrophic scarring can negatively effect satisfaction
- Mixed results with conservative treatment options
- Laser therapy has shown to have improve hypertrophic scars in burns

| Procedure | # of patients |
|--|---------------|
| Implant-Based Breast Reconstruction | 7 |
| Reduction Mammoplasty | 6 |
| Implant-based/Lat dorsi reconstruction | 3 |
| Autologous-Breast Reconstruction | 2 |
| Breast Biopsy | 1 |
| Total | 19 |

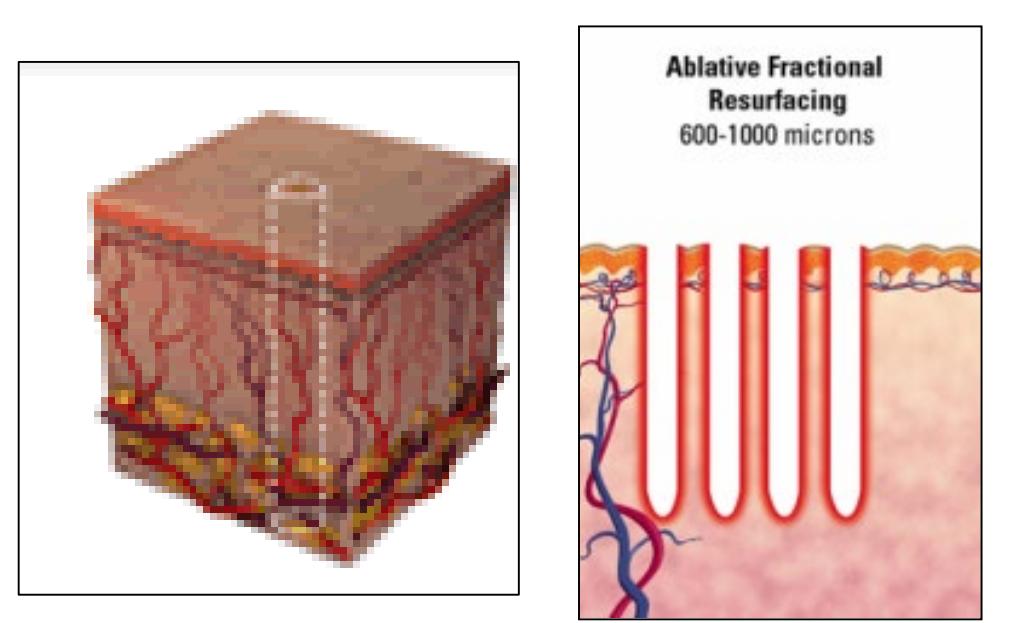
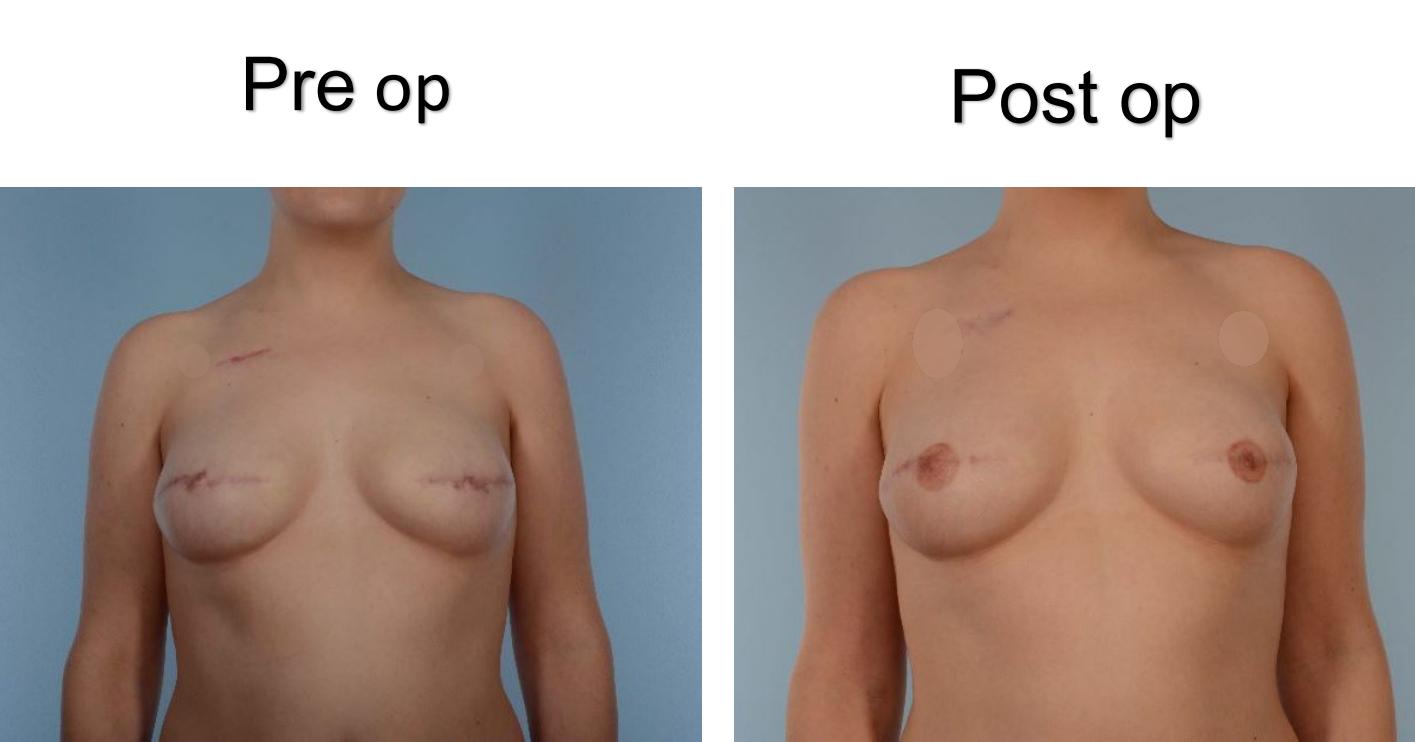
Methods

- Retrospective study
- 2014-2018
- Laser treatment for hypertrophic scars associated with prior breast procedures
- Exclusion: skin grafts/Integra, keloids, trauma/self-inflicted/burn or unknown etiology scar
- Data Collected:
 - Demographics
 - Laser Parameters
 - Patient Outcomes
 - Complications

| Demographics | |
|-------------------------------------|--|
| Mean Age | 45 y/o (21-63) |
| Former Smokers | 4/19 |
| Comorbidities | HTN (2), Pre-diabetic (1), Breast CA (8), Hyperlipidemia (1), DVT/PE (2) |
| Symptoms | Pain (13), Pruritus, Thickness, Redness |
| Number of Prior Surgical Procedures | 3.2 (1-7) |
| Adjuvant Therapy | Chemotherapy (5), Pre-op Radiation (4) |
| Pre-Laser Therapy | Kenolog (9), Silicone Sheeting (6), Scar Massage (4), Excision (3) |
| Number of Kenolog Injections | 2.55 (1-5) |
| Pre-Laser Surgical Complications | 13/19 |

Laser

| Laser Data | |
|----------------------------------|--|
| Number of Sessions | 2.05 (1-4) |
| Fractional CO ₂ Laser | 17/19 |
| CPG | 2/19 |
| Pulse Dye | 13/19 |
| Area Treated | 108.25cm ² (10-400cm ²) |
| Laser Complications | 0/19 (1 pt with Telangiectasia from Kenolog) |
| Implant Complications | 0/10 |



Outcomes

| Outcomes | |
|--|--|
| Number of follow-up Appointments | 2.8 (0-8) |
| Positive outcomes | Softer(13), Flatter(6), Less Pruritic(6), Less Pain(5), Thinner(4), Decreased Burning(1), Decreased Redness(5) |
| Negative Outcomes | Persistent Redness(4), Hypertrophic(1), Pruitus (4) Pain (4), Bruising(1) |
| Subjective Measures in Follow-up Notes | 51/53 |

Conclusions

- Safe and effective way for treating breast scars
- Improvement in patient reported symptoms
- No significant complications

Future Directions

- Prospective trial
- Validated patient reported outcomes
 - Pre-op, 6 months and 1 year
 - Breast and scar satisfaction
- Long term outcomes
- Complications

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Ovarian Cystadenofibroma: Case Series of a Rare Ovarian Tumor

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Ovarian Cystadenofibroma

- Ovarian cystadenofibromas are rare benign tumors that originates from the germinal lining and stroma of the ovary.
- They can be predominantly cystic, predominantly solid, or a variable combination of both.
- These tumors are classified, according to the epithelial cell types present, as serous, endometrioid, mucinous, serous papillary, clear cell, and mixed categories

EPIDEMIOLOGY

- These tumors are encountered in women of ages 15-65 years.
- These tumors are estimated to account for approximately 1.7% of all benign ovarian neoplasms.
- Currently no known risk factors associated with the development of these types of tumors

PRESENTATION

- May present with abdominal pain, lower abdominal distension, dysuria, bowel disturbances, vaginal bleeding and feminization. However, they can also be asymptomatic and found incidentally.
- It is a slow growing tumor but appears as complex mass lesion with both solid and cystic component on imaging thus, it is easily confused as malignant ovarian pathology.
- Cystadenofibromas can be located on one or bilateral ovaries. There are also reports of fallopian tubes cystadenofibromas.

MANAGEMENT

- Mainly surgical removal of cyst with or without oophorectomy.
- Frozen sections may aid in the confirmation of its benign nature and to avoid unnecessary extensive surgery.
- The overall prognosis with this tumor is excellent.

Original Patient

- 71 year old female that presented to oncologist after discovery of recurrent right breast invasive ductal carcinoma during routine screening mammogram.
- During this work-up, patient underwent CT imaging to assess for other metastatic disease and was found to have right adnexal mass measuring 6.9 x 49 cm with multiple septated cysts, suspicious for ovarian neoplasm
- Referred to surgical oncology due to concerning nature of the mass. She underwent laparoscopic converted to open bilateral salpingo-oophorectomy.
- Intra-operatively, there was a large ovarian mass with extensive adhesions throughout the lower portion of the abdomen encompassing omentum and small bowel.
- Frozen section was sent for evaluation which demonstrated possible adenoma. Final diagnosis was serous papillary cystadenofibroma.

Case Series

Purpose:

- After discovering this tumor in our patient, we contacted Sanford's pathology lab to inquire about any other cases in North Dakota. Surprisingly, there were several diagnoses of cystadenofibromas made in the last year.
- Since these tumors often induce concern for malignancy, the correct diagnosis of cystadenofibroma is important to save patients from unnecessary extensive surgery. This is particularly beneficial for women in the reproductive age group.
- Due to the rare nature of the tumor, we decided to further investigate previous cases. By discussing these cases, we hope to bring awareness to this diagnosis which will be advantageous in future diagnostic dilemmas.

Inclusion Criteria:

- Diagnoses in North Dakota Sanford Hospitals.
- Females from ages 18-100
- Only ovarian cystadenofibromas
- All subtypes of ovarian cystadenofibromas

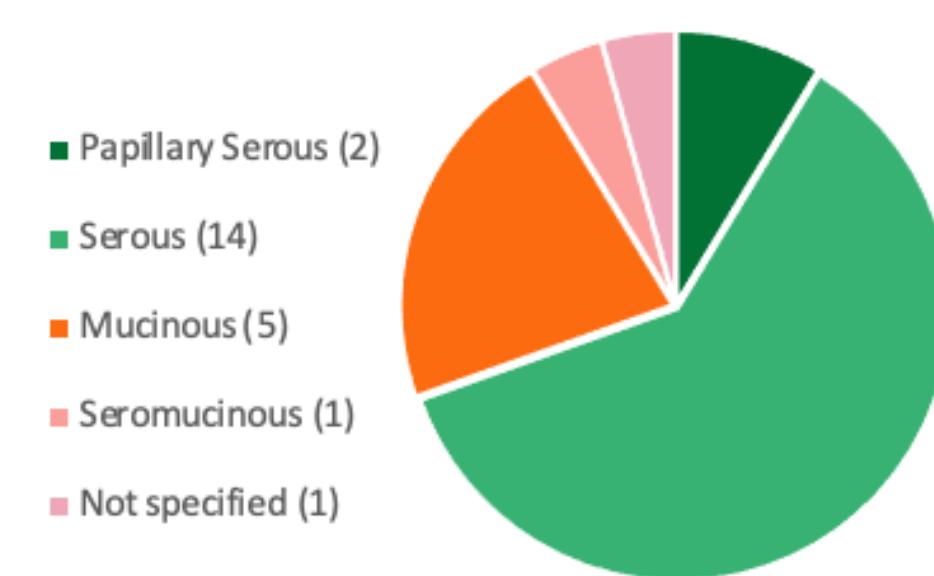
25 Total Cases

- Age Range: 18-77 years old (Average 46)
- Size Range: 3mm - 20 cm
- Frozen sections were obtained intra-operatively in only two cases
 - One frozen section was initially concerning for malignancy, but diagnosis was changed after final pathology
- 19 out 25 cases underwent oophorectomy
- 8 cases were noted to have extensive adhesions intraoperatively resulting in iatrogenic injuries to colon, bladder and fallopian tube.

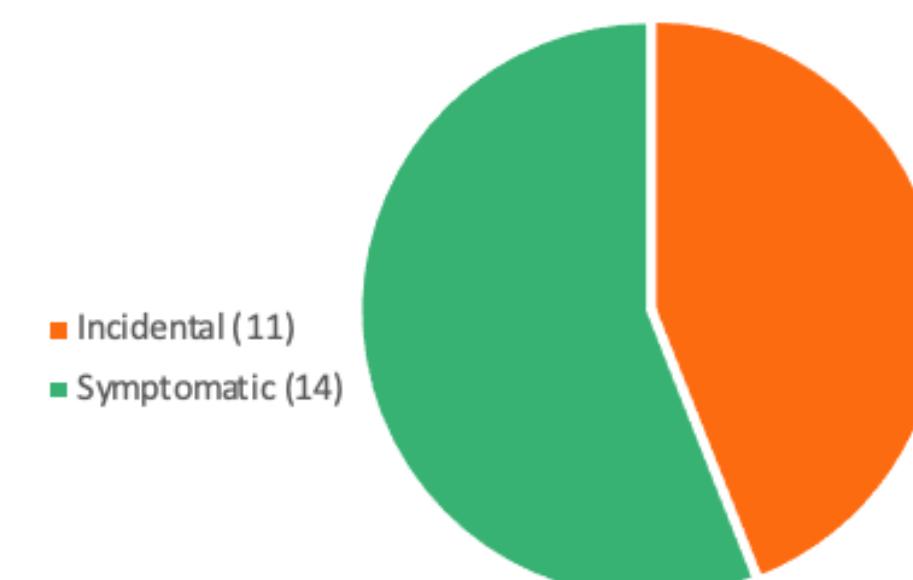
Important Cases

- 18 year old female with 10 cm ovarian tumor found incidentally on MRI during work up of back pain. Intra-operatively, there were extensive adhesions resulting in damage to the fallopian tube. This resulted in unplanned salpingectomy.
- 29 year old female that presented with chronic abdominal pain. Found to have 6.3 cm ovarian mass. CA 125, CA 19-9, CEA normal. Intra-operatively, due to the appearance of the ovarian mass surgeon proceeded with salphino-oophorectomy. Patient is now having infertility complications and requiring IVF.
- 33 year old female presented with ovarian torsion of the left ovary. Left ovary was found to have 7cm mass. There were extensive adhesions around left and right ovary which made the surgeon concerned about malignant process. They proceeded to take both ovaries which resulted in sterilizing the patient when the tumor was benign.

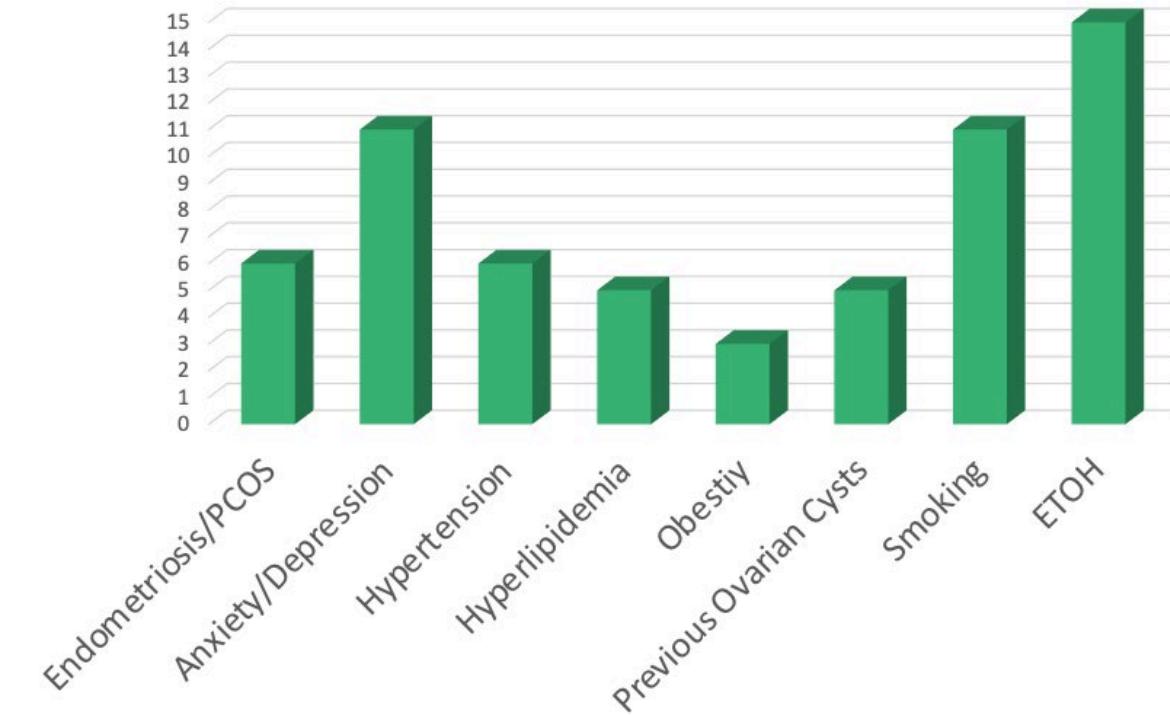
Tumor Subtype



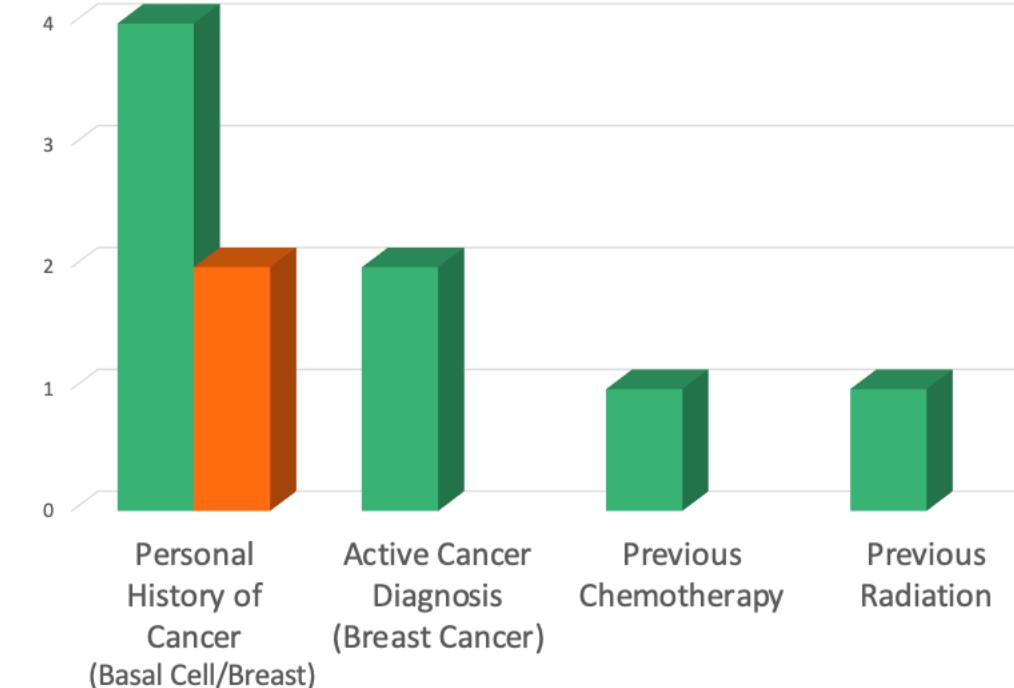
Discovery of Tumor



Shared Co-morbidities



Cancer History



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A Call for Help: A National Study of Self-Inflicted Trauma Among American Indians

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Sanford Health



INTRODUCTION

According to the Centers for Disease Control, self-inflicted injury accounted for approximately 273,000 emergency department visits and making it the 10th most common cause of death in the US. In 2018 American Indians (AI) had suicide rates of 22 per 100,000 versus 14.2 from non-AI. With this data we conducted a novel analysis using the National Trauma Data Bank (NTDB) on self-inflicted trauma in the AI population to better elucidate these concerning statistics.

METHODS & MATERIALS

Data was obtained from the NTDB 2012-2017. Patients were selected using ICD codes for self- inflicted trauma and 78,668 total patients were identified. A binary variable identified AI vs non-AI. Chi square and Kruskal Wallis H-test were conducted on categorical and continuous variables, respectively, to determine significance of the data.

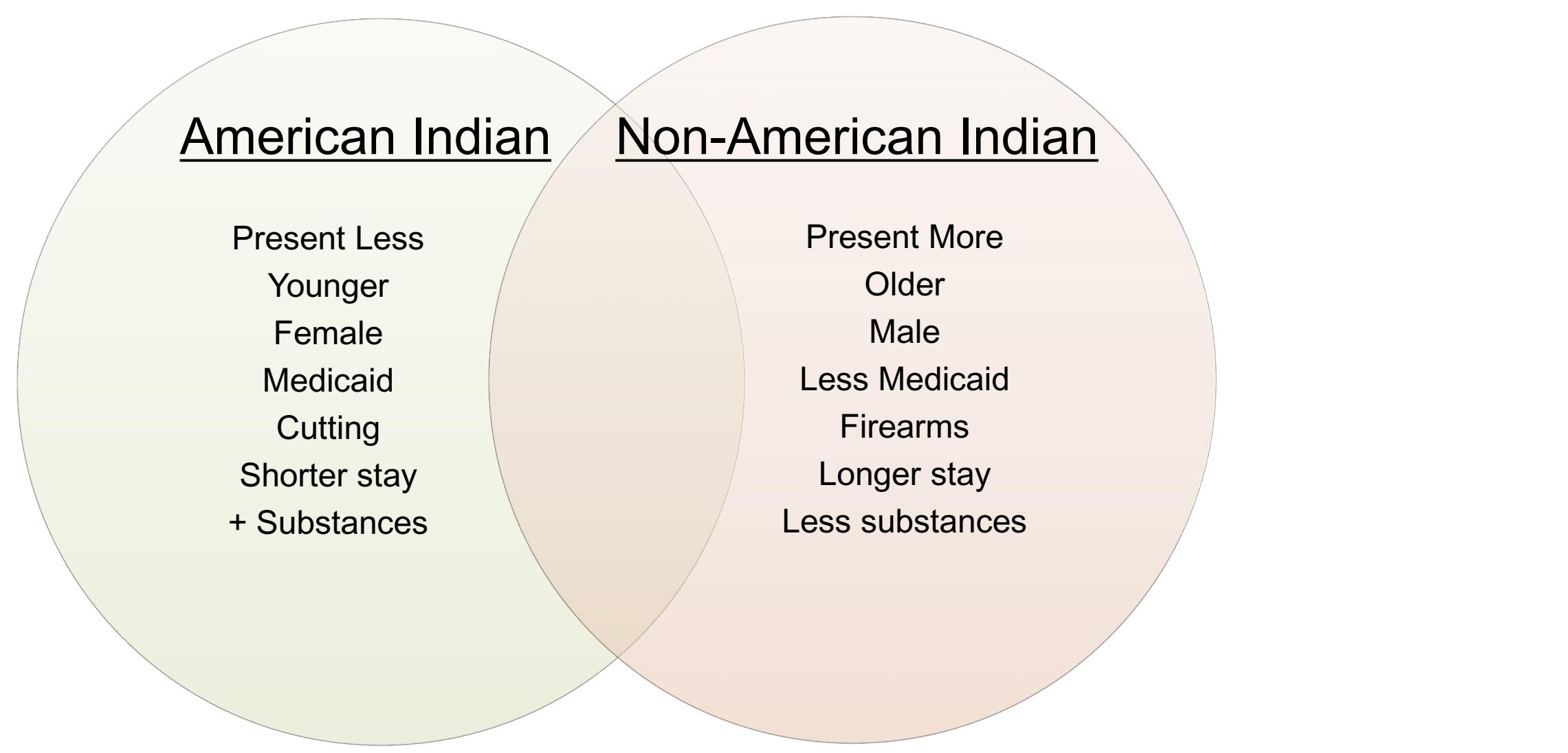
RESULTS

Regarding self-inflicted trauma, many significant differences between AI and non-AI patients were found. AI patients made up of 1176 or 1.5% of the 78,668 patients studied. The AI patients were younger than non-AI patients (30.9 vs. 38.7 years, respectively, $p < .001$), more female (28.7% vs. 25.9%, respectively, $p = .032$), and more likely to have Medicaid as their primary payer (40.5% vs. 21.5%, respectively, $p < .001$). The mechanism was significantly different ($p < .001$) with AI patients were more likely to present with a cut or piercing injury (58.4% vs. 41.0% among non- AI), and non- AI patients more likely to present with a firearm injury (29.4% vs. 17.8% among AI). AI patients were more likely than non-AI to have consumed alcohol beyond the legal limit (39.2% vs. 17.8%, $p < .001$) and to have tested positive for drug use (36.8% vs. 27.9% for non- AI patients, $p < .001$). AI patients had shorter length of stay than non- AI in the ICU (4.5 vs. 5.3 days, $p = .015$) and overall hospital stay (4.3 vs. 5.9 days, $p < .001$). Differences for ED discharge and hospital discharge were also statistically significant at the $p < .001$ level.

CONCLUSIONS

With the CDC reporting a comparatively higher rate of suicides in the AI population, they only made up 1.5% of the studied population while accounting for 2.5% of the general population in the United States. This suggests that despite an elevated suicide rate, AI patients are not as likely to present to trauma centers, likely due to their higher overall mortality in suicide completion. Despite not presenting at similar rates, the AI patients that do present are a younger age, have increased rates of substance use and utilize cutting/stabbing. It is the opinion of the author that this indicates a physical manifestation of a “call for help”. Despite utilizing more federal health care, the rate of AI suicidality and substance use suggests poorer mental health and ultimately leads to suicidal behavior like self-inflicted trauma. These trauma admissions may provide the encounter needed to intervene on these “cries for help” and help curb repeat suicidal activities or completion of suicide. Continued research and interventions are needed to address and attempt to decrease the rates of suicidal activity in the AI population.

Figure 1. Differences in presentation AI vs. Non-AI



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Duodenal obstruction secondary to impacted gallstone from cholecystoduodenocolonic fistula (Bouveret Syndrome)

Hunter Row, MD, Dustin Nowotny, DO, Sabha Ganai MD

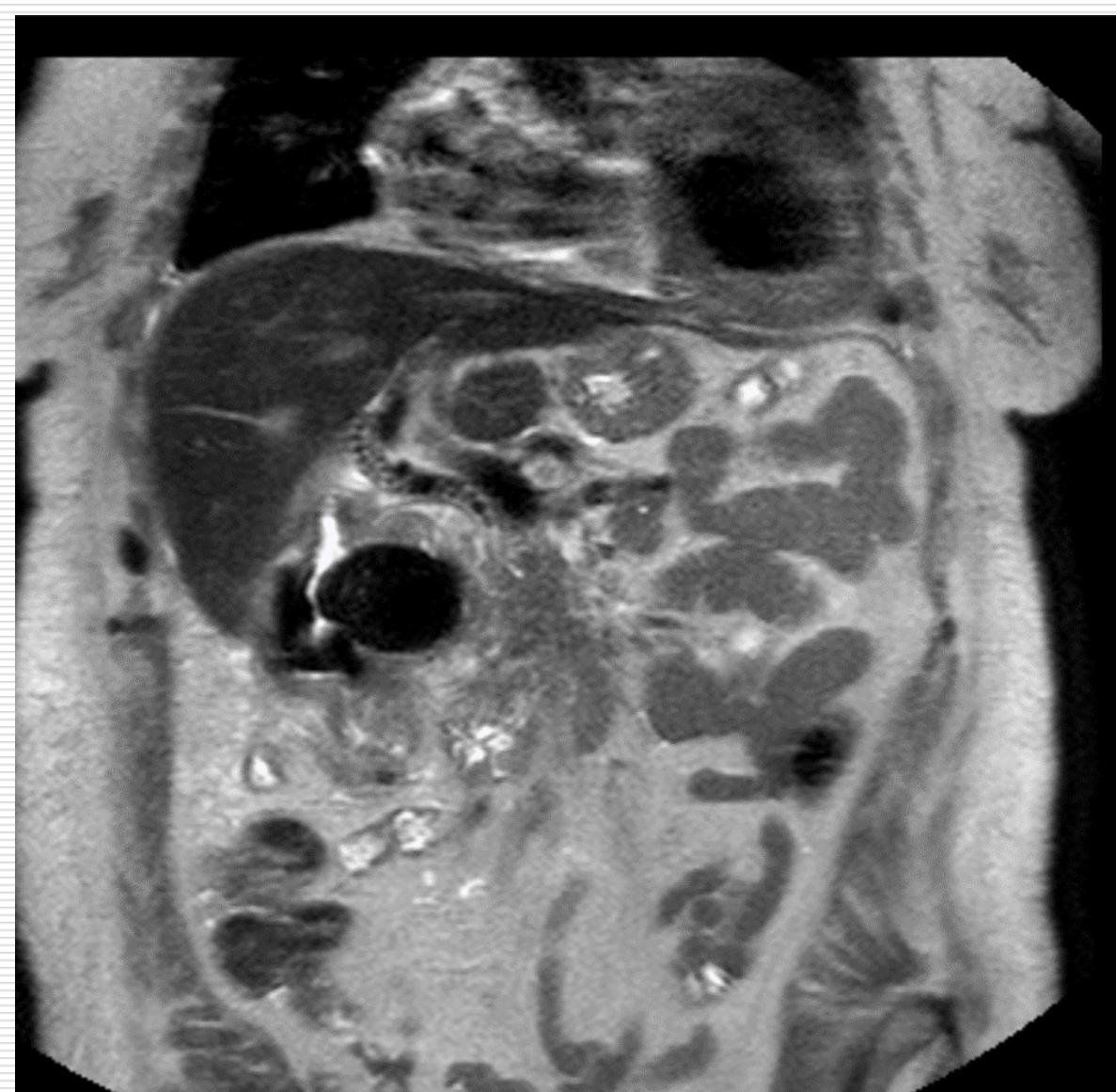
University of North Dakota School of Medicine and Health Sciences, Grand Forks, ND 58202

Case

- 67-year-old Native American female with history of acute cholecystitis requiring management with percutaneous cholecystostomy tube in 2019 in the setting of recent CABG for CAD, DM, HTN, HLD with 1 week history of RUQ abdominal pain, associated diarrhea, nausea and vomiting.

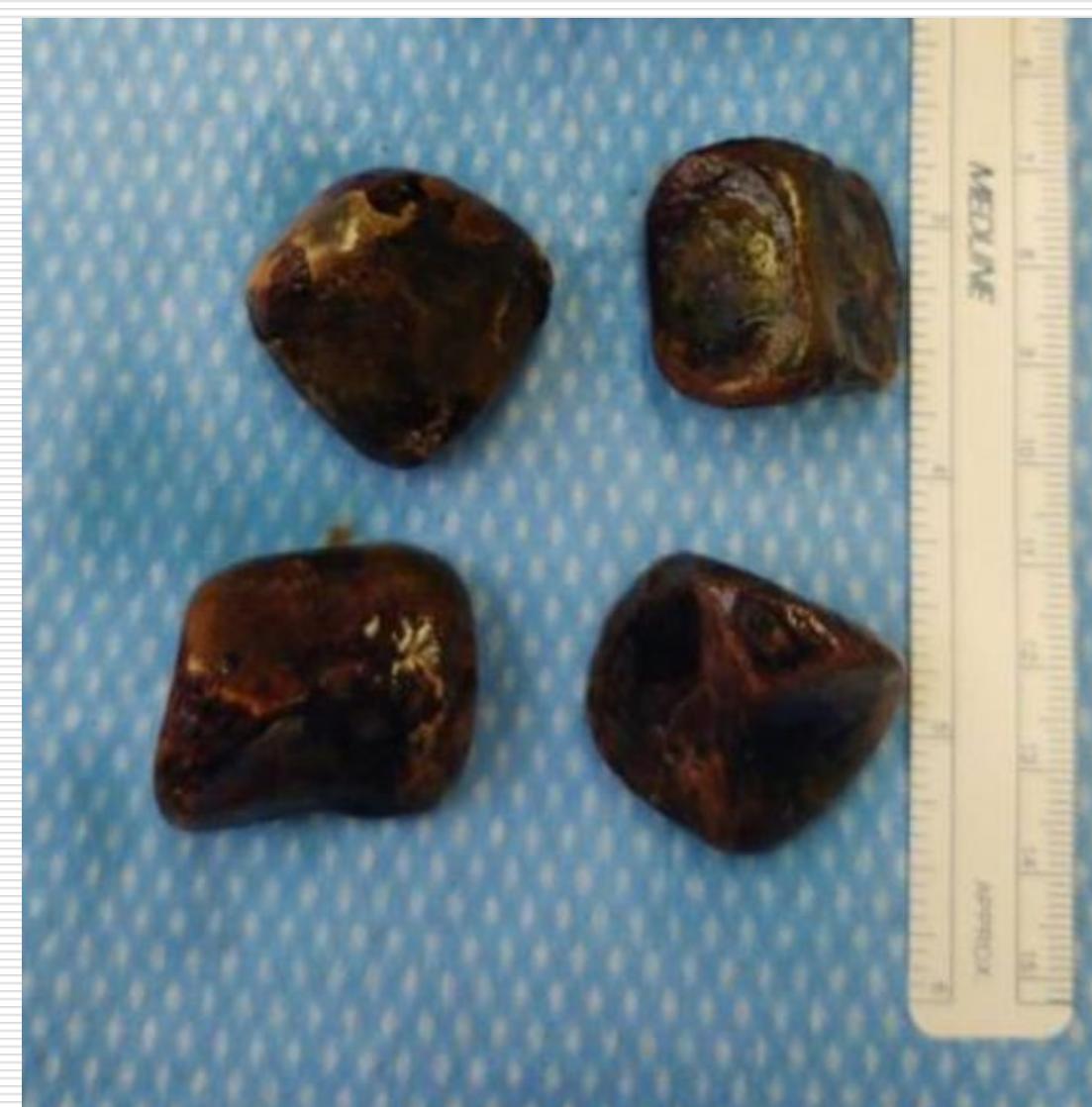
Physical Examination:

- HR 71 BP 174/76 Temp 98.1 RR 16 SpO₂ 100% BMI 25
- Abdominal tenderness and distention
- MRI shows 5cm impacted duodenal stone. 100s of stones within the common bile duct
- WBC 5.5 HGB 8.4 lipase 29 creatinine 1.39 K 3.4 Mag 1.5



Surgery

- In the operating room found to have cholecystoduodenocolonic fistula. This required extensive exploration to repair and included cholecystectomy with choledochoscopy, roux en y hepaticojejunostomy, partial colectomy, duodenorrhaphy with exclusion and gastrojejunostomy.



Discussion

- **Gallstone ileus**
- Occurs from cholecystoenteric fistula, which are present in 2-3% of all gallstone disease and are most commonly cholecystocolonic fistula at the hepatic flexure. Stones that pass through and cause obstruction are typically greater than 2.5cm. This very rare and occurs in less than 0.5% of patients who present with small bowel obstruction.
- **Bouveret syndrome**
- Represents 1-3% cases of gallstone ileus
- Gallstone impacted in pyloric channel or duodenum causing gastric outlet obstruction.
- Rigler's triad on AXR: dilated stomach, pneumobilia, radio-opaque shadow
- **Treatment**
- Surgical removal and repair
- Endoscopic removal
- Combination procedures

Conclusions

- Bouveret syndrome is exceedingly rare and typically presents with patients who are elderly and who would not tolerate and open surgical procedure. We are presenting a 67-year-old female with duodenal outlet obstruction from cholecystoduodenocolonic fistula that was repaired surgically. This was a very complex case and highlights the importance of preoperative planning and close follow-up for patients requiring percutaneous cholecystostomy tube.

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Changes in Patterns of Trauma Injuries at Sanford Medical Center Fargo During the COVID-19 Pandemic

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INTRODUCTION

- COVID-19 has impacted medicine significantly in the last year. Over 600,000 Americans have died, with over 33 million known cases reported in the country.
- Additionally, the pandemic has impacted society in both large and geographically variable ways. For instance, mask mandates and stay-at-home orders were implemented differently over the the country and differed widely between states.
- There are well-documented changes in hospital utilization during this time period.
- Several studies have been done looking at trauma patterns during the pandemic, but these have mostly been examining changes in urban areas. To date, there has been little research exploring the pandemic's impact in rural areas and surrounding referral centers.
- Our study is exploring the changes in patterns of trauma injuries during the COVID-19 pandemic, specifically as it affected Sanford Medical System Fargo

METHODS

- Data is drawn from the trauma registry at Sanford Medical Center for years 2018-2020. Additional data is drawn directly from the electronic medical record. All patients presenting with traumatic injuries are included. This represents a level one trauma center with a referral base extending through large parts of North and South Dakota and significant parts of Minnesota.
- The total number of trauma patients, mechanism of injury, age, gender, length of stay and discharge disposition were collected.
- Additionally, information on payment source (private insurance, self-pay, Medicare/Medicaid) was collected.
- Pearson's Chi-Squared test was used for statistical analysis.

RESULTS

- No statistically significant differences were seen in Injury Severity Score, total number of trauma patients, or patient demographics.
- While trauma admissions increased each year, including 2020, this was not statistically significant.
- Interestingly, patients who were self-pay increased from 5.5% in 2018 to 8.6% in 2020, a statistically significant difference.

DISCUSSION

- We believed that we would see statistically significant differences in the trauma population seen at Sanford Medical Center Fargo during the COVID-19 pandemic during 2020. We thought these changes would be different from those seen in other regions, but still significant. However this was not the case, with exception of payment source. Unlike in other studies, we did not find any other statistically significant differences.
- There are a number of differences between other regions studied and the catchment area for Sanford Medical Center Fargo as well as differences in the response both of governments and populations to the COVID-19 pandemic. This may account for some of the difference
- The one notable difference seen in 2020 was a small but significant increase in self-pay patients. This may be due to a decrease in employment during the pandemic with corresponding loss of health care insurance.

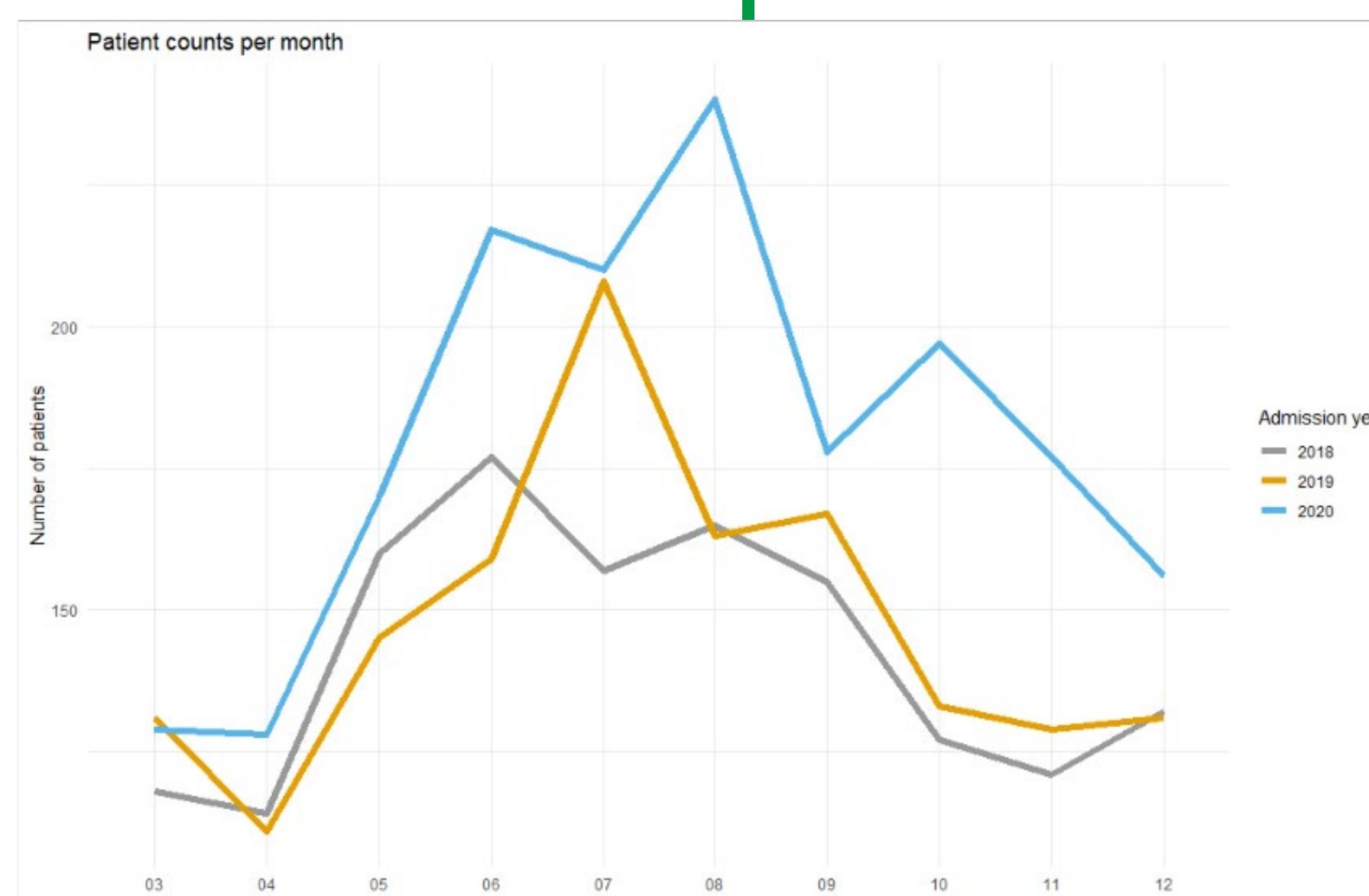


Table 2. Trauma patient counts per month at SMCF, separated by year from 2018-2020.

| | 2018 (N=1426) | 2019 (N=1477) | 2020 (N=1802) | Total (N=4705) | P value |
|-------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------|
| Age | | | | | 0.253 ¹ |
| Mean (SD) | 50.339 (28.155) | 51.147 (27.358) | 51.931 (27.872) | 51.203 (27.800) | |
| Median (Q1, Q3) | 54.593 (25.241, 75.056) | 55.335 (26.886, 74.494) | 55.818 (28.359, 76.048) | 55.291 (26.971, 75.127) | |
| Min - Max | 0.047 - 101.448 | 0.049 - 104.255 | 0.016 - 104.520 | 0.016 - 104.520 | |
| Age groups | | | | | 0.325 ² |
| 17 and under | 248 (17.4%) | 222 (15.0%) | 262 (14.5%) | 732 (15.6%) | |
| 18 to 26 | 130 (9.1%) | 151 (10.2%) | 165 (9.2%) | 446 (9.5%) | |
| 27 to 35 | 122 (8.6%) | 126 (8.5%) | 171 (9.5%) | 419 (8.9%) | |
| 36 to 50 | 160 (11.2%) | 170 (11.5%) | 230 (12.8%) | 560 (11.9%) | |
| 51 to 65 | 257 (18.0%) | 285 (19.3%) | 306 (17.0%) | 848 (18.0%) | |
| 66 to 75 | 174 (12.2%) | 186 (12.6%) | 214 (11.9%) | 574 (12.2%) | |
| 76 and over | 335 (23.5%) | 337 (22.8%) | 454 (25.2%) | 1126 (23.9%) | |
| Gender | | | | | 0.254 ² |
| Female | 628 (44.0%) | 608 (41.2%) | 753 (41.8%) | 1989 (42.3%) | |
| Male | 798 (56.0%) | 869 (58.8%) | 1049 (58.2%) | 2716 (57.7%) | |
| Race | | | | | 0.830 ² |
| American Indian | 174 (12.2%) | 189 (12.8%) | 200 (11.1%) | 563 (12.0%) | |
| Asian | 10 (0.7%) | 10 (0.7%) | 12 (0.7%) | 32 (0.7%) | |
| Black or African American | 35 (2.5%) | 41 (2.8%) | 58 (3.2%) | 134 (2.8%) | |
| Native Hawaiian or Pacific Islander | 1 (0.1%) | 1 (0.1%) | 2 (0.1%) | 4 (0.1%) | |
| Other Race | 0 (0.0%) | 1 (0.1%) | 0 (0.0%) | 1 (0.0%) | |
| Unknown | 16 (1.1%) | 20 (1.4%) | 28 (1.6%) | 64 (1.4%) | |
| White | 1190 (83.5%) | 1215 (82.3%) | 1502 (83.4%) | 3907 (83.0%) | |

Table 1. Trauma patient demographics presenting to SMCF by year.

CONCLUSIONS

- While the COVID-19 pandemic has had measurable impact on trauma populations described in other regions, Sanford Medical Center Fargo has not seen a similar statistically significant change in trauma patient volume or population demographics.
- Further research is ongoing to incorporate data from Sanford Medical Center in Sioux Falls and Sanford Bismarck into this analysis.
- Further research into differences in behavior during the pandemic between rural/semi-rural areas and urban centers could help examine the unique findings in our study.

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ACKNOWLEDGEMENTS

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INCIDENTAL BREAST CANCER IN BREAST AUGMENTATION CAPSULE

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ABSTRACT

- We present a case of a 75-year-old female who presented for breast augmentation revision due to bilateral capsular contracture. The breast implant capsules were sent to pathology. Incidentally, the left capsule returned as invasive ductal carcinoma. She was treated with mastectomy.
- Debate exists regarding breast implants causing delay in the diagnosis of breast cancer. This woman did have a recent, previously normal mammogram and she was asymptomatic. Her breast cancer was diagnosed incidentally in her capsule. There are currently no guidelines regarding routine histological evaluation of resected breast implant capsules. This case raises the question: should there be?

INTRODUCTION

- Breast cancer is the most common cancer in American women (excluding skin cancer)⁹. 1 out of 8 women will develop invasive breast cancer in her lifetime⁹. Many organizations have published varying recommendations regarding breast cancer screening. Most recommend mammography beginning around age 50 and occurring every 1 to 2 years^{7,8} with the acknowledgment that the screening schedule should be individualized.
- Breast augmentation is the most common type of plastic surgery performed for cosmetic reasons in the United States¹. Augmentation does not increase a women's risk of invasive breast cancer, but implants may interfere with early detection^{2,5,6}. The implants are radiopaque and may obscure native tissue viewing³. Since the late 1980's, mammography with additional implant displacement views have become routinely used in the screening of augmented breasts. In this view, the implant is pushed back, and the breast tissue is pulled forward to improve visualization and overall accuracy of cancer detection³. MRI and ultrasound have also been proposed as adjuncts^{7,8}, especially in women with dense breasts; however, there are no clear-cut guidelines regarding screening for women with breast augmentation.
- One of the most challenging complications following breast augmentation is capsular contracture⁴. The pathophysiology remains largely unknown but is thought to be an excessive fibrotic reaction due to subclinical capsular infection⁴. The capsule surrounding the implant hardens and can become calcified. This distorts the feeling and appearance of the breast. In addition, it also makes breast cancer screening more challenging.

CASE REPORT

- 75-year-old female presented in consultation for breast augmentation revision. Her chief complaint was asymmetric, deformed, and hard breasts bilaterally. She had a history of prior breast augmentation 30+ years ago in another country with unknown implants. She did have a revision to the left side ~15 years prior. She was found to have grade IV capsular contractures bilaterally. Of note, she denied breast pain, palpable lumps or nipple discharge but she did have a history of estrogen use for the past 25 years for hot flashes.
- She underwent a preop mammogram (1 month prior to the procedure) which showed heavily calcified capsules bilaterally but BiRADS 2.
- She underwent total capsulectomy with replacement of both implants. The capsules were heavily calcified and had to be removed piecemeal. There were no notable abnormalities to either capsule pockets. Both capsules were sent to pathology given their subglandular location.
- The left breast capsule returned invasive ductal carcinoma (HR+/HER-). The margins were positive (specimen was not orientated). She had a workup consisting of breast MRI, u/s with lymph node biopsy and oncology and general surgery consultation. She was started on an aromatase inhibitor and eventually underwent left nipple-sparing mastectomy with SNLB. 1 of 23 lymph nodes returned positive for metastasis. She was diagnosed with stage 2, pT1N1M0 invasive ductal carcinoma.
- Decision regarding adjuvant therapy is pending.

CONCLUSION

- The patient described here presented with a complication following breast augmentation. She had a previously normal mammogram and was asymptomatic but was diagnosed with invasive breast cancer. This was based on histological evaluation of her implant capsule.

- This is due to the inability to displace the implant, patient discomfort, and difficulty visualizing tissue through calcifications⁵. The accepted treatment for capsular contracture is capsulectomy⁴. There are currently no guidelines for histological evaluation of these capsules after removal. There is also no literature describing invasive breast cancer discovered in implant capsules.

- Are we missing breast cancers that could be diagnosed earlier? Should we be sending in all breast implant capsules?

- This is a difficult question to answer. Removal of the breast implant capsule is not without risks. The capsule can be difficult to dissect out in its entirety, especially if not hardened due to contracture. Capsule dissection can add considerable operative time exposing the patient to additional anesthetic and increasing the risk of bleeding and edema. There is an additional cost associated with increased operative time and the pathologic evaluation itself.

- Perhaps a case could be made for taking random capsular biopsies in at risk women or sending in all capsules that are routinely removed due to capsular contractures. More research is required to investigate the cost-effectiveness and value of histological evaluation of implant capsules to aid in the diagnosis of breast cancer.

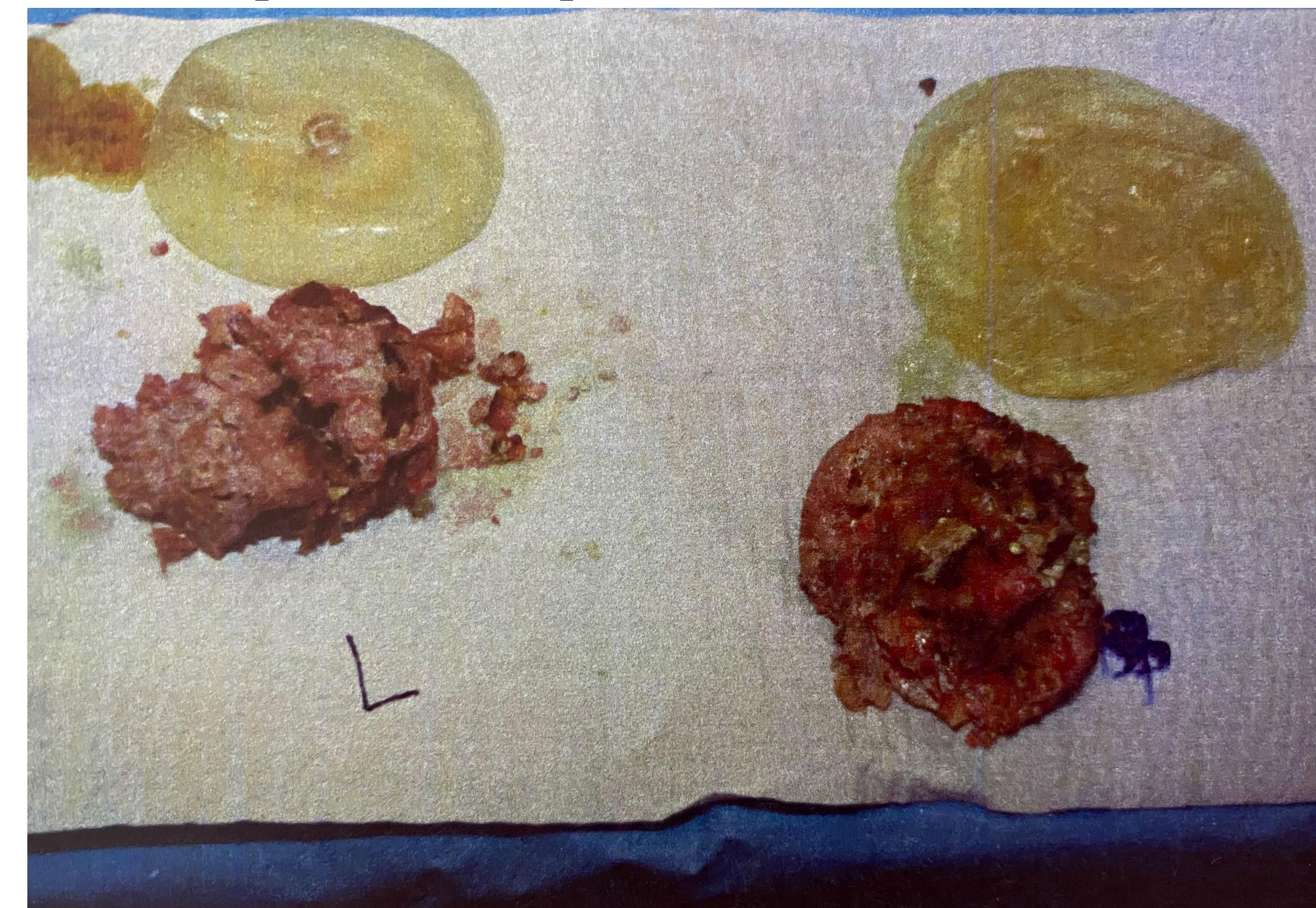
Pre-Operative Photos



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Breast Capsules Post-Op



Farm Trauma, Then and Now. Comparative Analysis 1978-1983 to 2006-2020. Preliminary Results

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Abstract

- Agricultural industry has highest death rate per 100,000 workers in US and ranks second for nonfatal injuries per 10,000 workers.
- Farms in US have decreased in number and increased in size over 20th and 21st century
- Farming machinery has changed with larger, more efficient machines.
- Average age of Farmer in 1980 was 50 compared to 57 in 2017
- We hypothesize that injury patterns on farms have changed
- Retrospective chart review at level I trauma center performed and results compared to 1978-1983 chart review

Discussion

- Average age 1978-1983 was 36, 2006-2010 was 47, 2010-2020 was 48
- Improved imaging modalities and increased utility may affect results
- Hospitals and patient care have changed: LOS decreasing, however, ISS increasing

Methods

- Retrospective chart review using location ICD codes
- Results compared with *Cogbill and Busch: The Spectrum of Agriculture Trauma. 1985*
- Analyses were performed using SAS software V9.4 (SAS Institute, Cary, NC, USA).

Conclusions

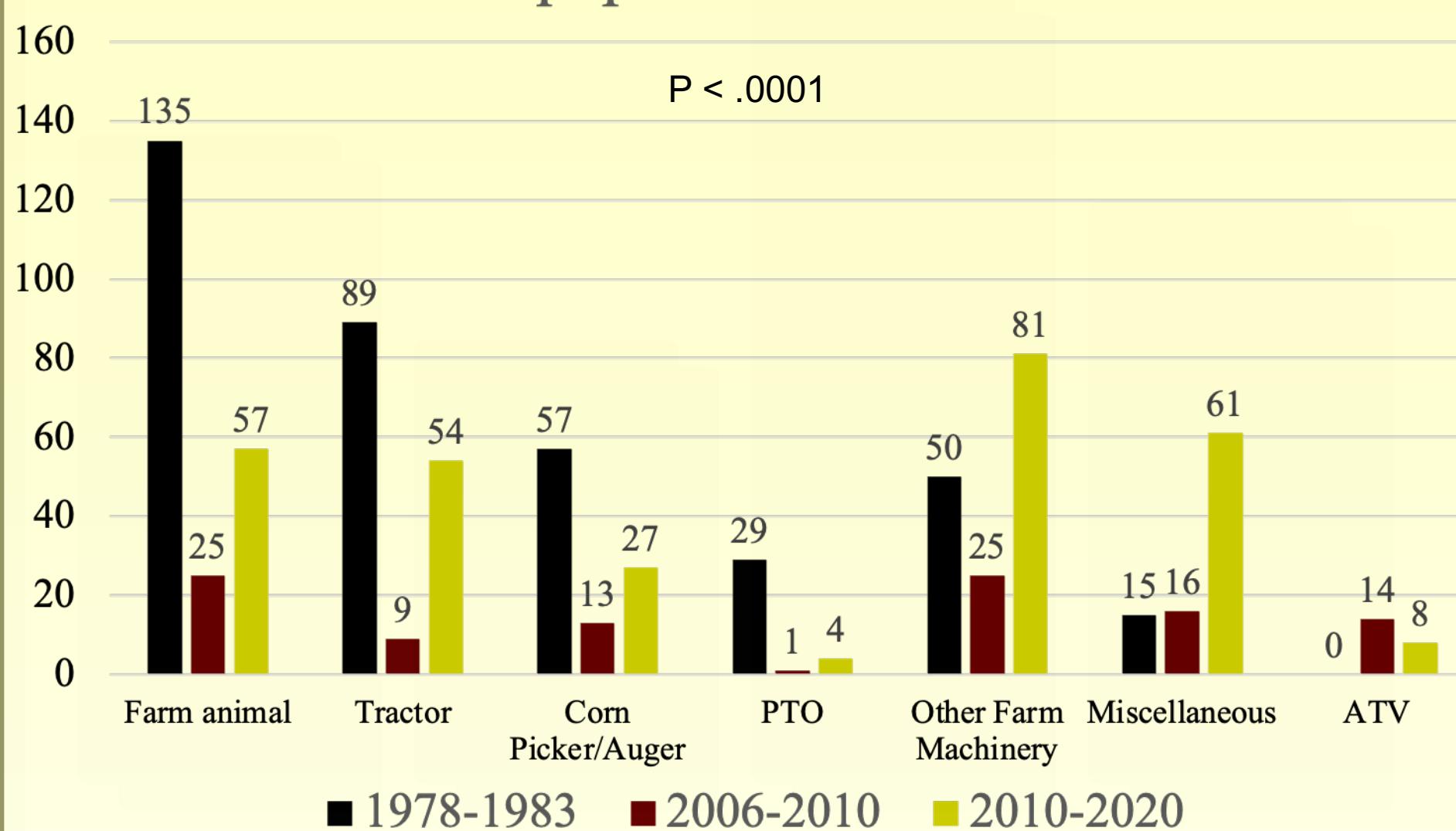
- Patterns have changed
- Patients are older
- Injury severity increasing
- Surprisingly, few ATV injuries

References

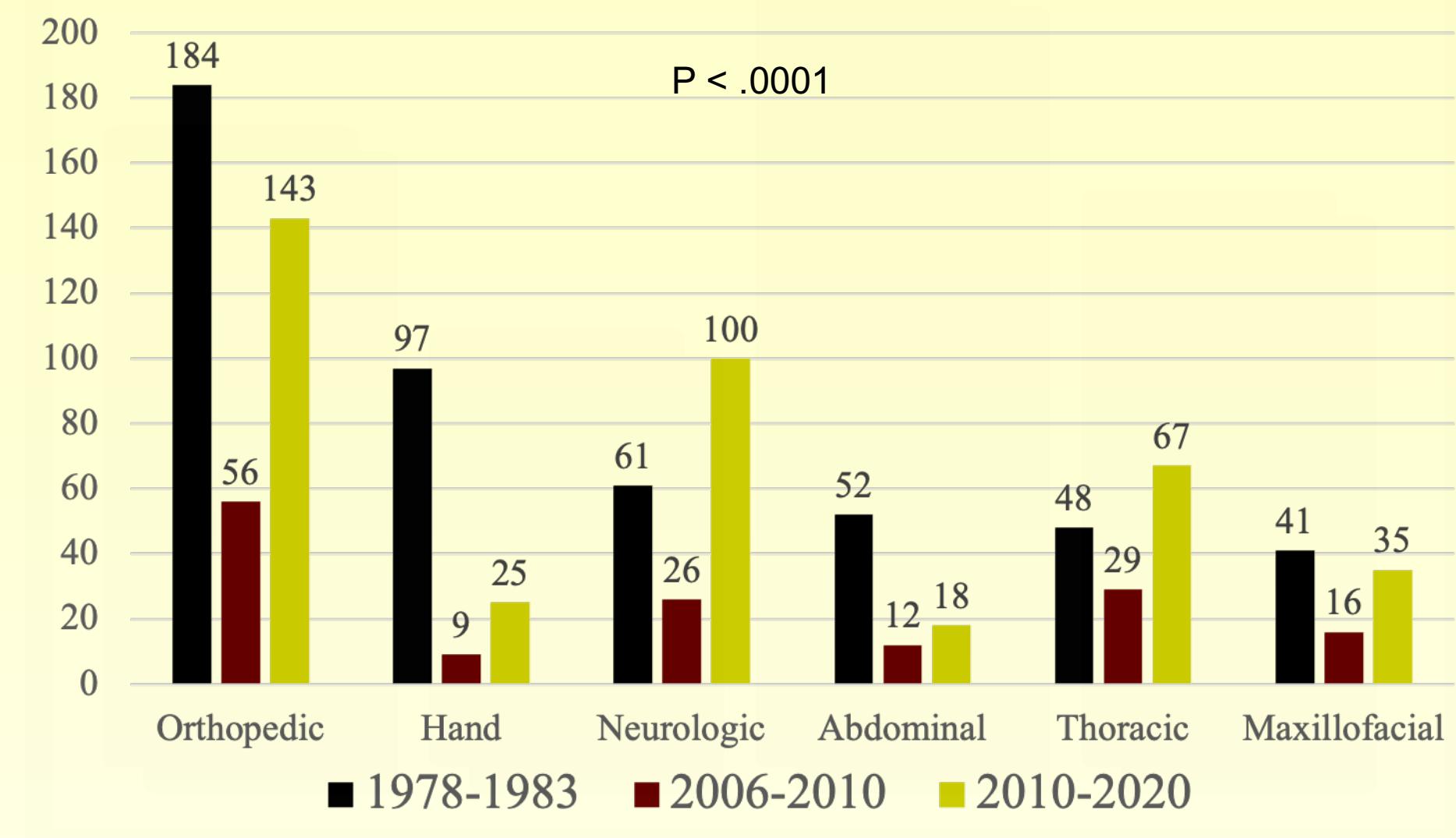
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2. Dimitri, Carolyn et al. The 20th Century Transformation of U.S. Agriculture and Farm Policy. *Economic Research Service*. USDA. 2005
3. Injury Incidence and Rates. Most Dangerous Industries. National Safety Council analysis of Bureau Labor Statistics Data. 2021
4. David Widmar. Agricultural Economic Insights. *The Aging American Farmer*. Figure 1. Average Age of Primary Farm Operators. USDA Census of Agriculture. 2015
5. Farm Producers. USDA NASS, 2017 Census of Agriculture

Results

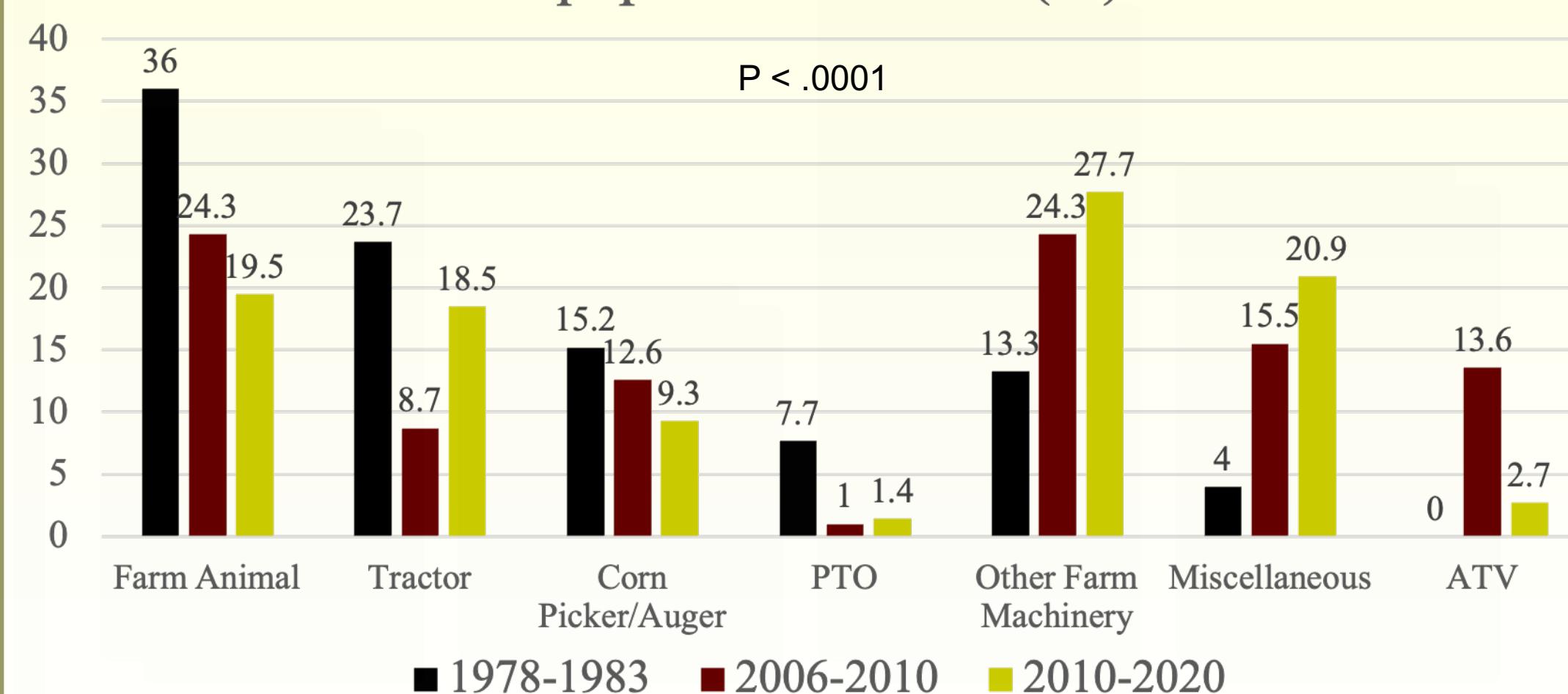
Equipment Involved



Injury Type



Equipment Involved (%)



Animal and Tractor Falls (%)

