

A Study on Challenges of Day Care Surgery Cancellations

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Introduction

In today's hospitals, it is standard practice to ambulate surgical patients as soon as feasible after surgery.

Day care surgery is now a widely acknowledged treatment option for most surgical patients, and it offers several benefits for all stakeholders, including patients, in addition to being a more cost-effective choice for the health-care system, which is strained by limited resources.

In India, real cases account for fewer than 15% of all cases operated on across all surgical specialties. Ophthalmology and ENT disciplines account for the majority of these patients, followed by Gynecology and General Surgery

Surgery cancellation on the day of the treatment is a well-known problem all around the world. Case cancellations, in particular, are a major cause of inefficient use of operation theatre time, wasting valuable resources

Introduction

- The percentage of procedures that are cancelled ranges from 1% to 30% in different areas of the world. An Australian research divided the causes for cancellation of operations into two categories: avoidable and non-preventable.
- The cost of cancelling a scheduled operation is borne by hospitals, caregivers, and patients. Cancellation generates mental distress, which has a negative influence on results.
- Cancellations can occur for a variety of reasons, including patient, workup, surgeon, or administrative reasons. Knowing the reasons allows you to take the necessary actions to limit the number of cancellations to a minimum.
- Cancellation of elective procedures is a criterion for evaluating the quality of patient care and the management system. Cancellation rates at different hospitals have been observed to range from 10% to 40%

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- Surgery cancellation is a well-known quality issue that demonstrates managerial inefficiency. High cancellation rates might signal that valuable health resources are being wasted, resulting in higher costs. It raises healthcare expenditures and causes severe hardship for individuals and their families. As a result, cancelling scheduled surgeries would lower the hospital's revenue.
 - In general, there is relatively little information on the economic effects of surgery cancellation in India and other regions of the world.
 - As a result, this research was carried out at Pristyn Care associated Hospitals and Clinics all across India in order to gather cost data that would aid leadership and management in making quality and efficiency-driven decisions. The goal of this research was to determine and quantify the expenses associated with cancelling elective procedures at Pristyn Care associated hospitals.

Literature Review

- In 2015 research was done on cancellation of operations in Saudi Arabian Hospital by “Khalid O Dhafar and associates to identify the frequency and reasons of operation cancellation in 25 Makkah region hospitals of Saudi Arabia. The study discovered a 7.6% cancellation in Makkah region hospitals, with the three most prevalent explanations being patient related, facility related, and inadequate work-up”.
- Another study in 2018 on “economic impact of surgery cancellation in a general hospital of Iran by Nimetcan Mehmet and associates was done to identify and estimate cost borne by cancellation of elective surgeries in hospital. The study found that the cost of surgery was extremely high in the general hospital, more than half of the cost of surgery cancellations (62.1%) was attributable to preventable factors”.
- A study on financial cost of elective surgery cancellations by Elina Turunen and associates was done in 2018 to measure the financial cost of day of surgery cancellations using procedure prices for a university hospital’s 13 operative specialties during a period of nine months. The study showed that DOS cancellations waste time and money for health-care institutions. Setting targets and offering ongoing improvements for optimizing health care expenditures should be tracked and assessed in a methodical manner.

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- The study on global prevalence and reasons for case cancellation on the intended day of surgery by Semagn Mekonen and associates in 2020 to find out the global prevalence of case cancellation on the intended day of surgery, the prevalence of case cancellation on the intended day of surgery among the continents, the prevalence of case cancellation among Low and Middle-income countries and lastly the main reasons for case cancellation on the intended day of surgery.
 - The study showed that the global prevalence of case cancellation was quite high in the Meta-Analysis. Low- and middle-income nations had the greatest rate of case cancellation, inadequate operating theatre facilities were the primary cause for case cancellation, and patients undergoing orthopedic surgery had a higher rate of case cancellation.
 - A study on reasons for urologic day care surgery cancellation in 2010 by NK Dakun and associates showed that we are still faced with a high cancellation rate of urologic day cases and these are mainly due to avoidable reasons. Patient as well as physician education and provision of adequate materials and infrastructural development are recommended to reduce these; so as to gain maximally from urologic day surgery practice.

- **Research Question**

- What is the quantitative impact of day care surgery cancellations in terms of opportunity cost loss in business revenue?

- **Objectives**

1. To track cancellations across all specialties in IPD.
2. To identify reasons for case cancellations to minimize the opportunity cost loss.
3. To calculate opportunity cost loss due to cancellations.

- **Study Design:** Observational and Analytical Study Design
- **Study Setting:** Pristyn Care collaborated Clinics & Hospitals
- **Duration of Study:** 3 Months
- **Data Collection:** Data was collected from the Management information system of Pristyn Care.
- Scheduled elective general surgical procedures were reviewed from the records from February to May 2021. IPD cancellations were defined as patients who were on the operating list but did not have their operation on the scheduled day. The research did not include patients who were receiving emergency surgery.
- Retrospective evaluation of rate of IPD cancellations in Clinics & Hospitals collaborated with Pristyn Care was performed in this study. The frequency and reasons for cancellation of elective surgical cases in various specialties were investigated in order to make recommendations for improvement.
- **Data Analysis Plan:** Microsoft Excel 365 was used for data analysis.

Methodology

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- This study was carried out at Pristyn Care associated Hospitals and Clinics all over India. All patients scheduled for elective operations had their in-patient medical data examined retrospectively for a period of 3 Months, starting from 01 February 2021 to 01 May 2021. Interventions for improvement in lowering the cancellation opportunity cost were carried out in first week of May, after analysing the result from 01 February till 01 May.
 - Opportunity Cost Loss was again analysed for the month of May and results were compared.
 - Patients who were scheduled for elective surgery comprised up the study population. The research did not include patients who were receiving outpatient surgery or emergency surgical procedures.
 - The cases ranged from general surgery through Urology, Proctology, Laparoscopy, Vascular, ENT, General Gynecology, Cosmetic Gynaecology, IVF, Orthopedics, Ophthalmology, Aesthetics.

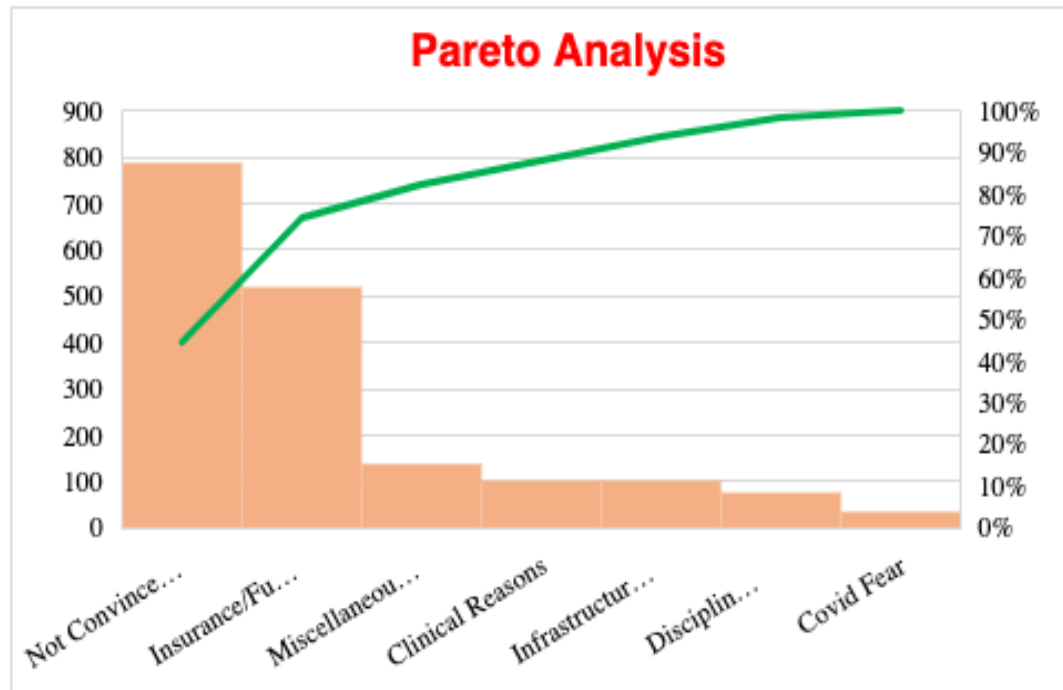
Results

- **ACTUAL IPD DURING STUDY PERIOD (FEBRUARY-MARCH)**
- The total number of IPD Cases during these three months accounted to be 9746 (Feb-2311, March-2761, April-2451) and the month of May accounted 2223 cases.

Actual IPD Done and Total Surgery Cancellations						
Category	Feb	Mar	Apr	May	Grand Total	Total Cancellations
Aesthetics	144	199	196	166	705	155
ENT	84	93	72	65	314	55
General Gynaecology	32	57	57	73	219	28
Laparoscopy	100	108	84	79	371	118
Ophthalmology	120	158	161	140	579	109
Orthopaedics	7	7	6	2	22	4
Proctology	882	1020	907	865	3674	804
Urology	584	733	641	575	2533	485
Vascular	152	167	152	121	592	245
Cosmetic Gynaecology	198	206	160	132	696	198
IVF	8	13	15	5	41	-
Grand Total	2311	2761	2451	2223	9746	2201

• REASONS FOR CANCELLATIONS

- The reasons for surgical cancellation were separated into seven categories using the 80-20 pareto principle
- If the cause for cancellation was not noted in the patient's medical record, it was considered an unrecorded factor



Cancellation Type	Underlying Reasons
Clinical Reasons	Underlying Medical Condition Of Patient
	Medical Evaluation Incomplete
	Change in Treatment Plan
Discipline/Timing Factors	Doctor not reaching on Time
	Change in OT Timings
	Patient not reaching on time
Infrastructure Factors	Non Availability of Staff
	Travel Issue of Patient
	Hospital Preference by Patient
Insurance/Fund Concerns	Fund Issues of Patient
	Insurance approval from Hospital Declined
	Insurance approval from Company Declined
	Patient wants Cashless only
Not Convinced Patient	Patient Not Ready for treatment
	Patient Underwent Treatment Somewhere Else
	Surgery Postponed
	Patient Not Convinced
	No Show
Covid Fear	-
Miscellaneous Factors	-

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- Highest cancellations were due to not convinced patient (44.8%), followed by cancellations due to insurance rejection/funds issues(29.4%), miscellaneous factors (7.7%) and clinical factors (5.9%) respectively

Reasons for Surgery Cancellation				
Cancellation Reason	February	March	April	Grand Total
Clinical Reasons	48	27	30	105
Covid Fear	3	11	19	33
Discipline/Timing Factors	9	31	37	77
Infrastructure Factors	33	29	38	100
Insurance/Fund Concerns	143	163	212	518
Miscellaneous Factors	39	53	45	137
Not Convinced Patient	229	303	257	789
Grand Total	504	617	638	1759

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- Department wise cancellations came out to be in the following manner during the three months with highest cancellation accounting to the Proctology category (36%) and lowest in the Orthopaedics category(0.17%)

Department wise Surgery Cancellations				
Category	February	March	April	Grand Total
Aesthetics	17	63	44	124
ENT	17	14	19	50
General Gynaecology	8	3	10	21
Laparoscopy	23	31	45	99
Ophthalmology	33	33	23	89
Orthopaedics	1	1	1	3
Proctology	173	232	229	634
Urology	96	119	155	370
Vascular	54	62	74	190
Cosmetic Gynaecology	82	59	38	179
Grand Total	504	617	638	1759

COST OF SURGERY CANCELLATIONS

- Category wise surgery cancellations was calculated and the monthly average ticket size for each category was generated. Companies use average ticket size in their sales and profitability calculations
- The average ticket size for each category was generated by calculating the ticket size of surgery in each category (sum of estimated surgery amount divided by number of surgeries in that category). Average ticket size is the bare minimum cost of every surgery type that the company expects to generate from the surgery.

Category wise Monthly Average Ticket Size					
Category	Feb-ATS	Mar-ATS	Apr-ATS	May-ATS	Grand Total
Aesthetics	48,817.71	46,065.58	48,293.37	49,769.82	48,119.28
Cosmetic Gynaecology	15,816.67	14,917.18	16,367.56	15,801.89	15,674.28
ENT	61,407.44	60,189.10	65,760.97	62,698.31	62,312.07
General Gynaecology	39,578.13	31,386.63	29,523.68	32,234.25	32,381.22
IVF	54,000.00	52,769.23	57,366.67	33,900.00	52,390.24
Laparoscopy	81,055.25	72,296.02	74,521.43	73,267.48	75,367.73
Ophthalmology	31,690.83	35,791.77	32,773.35	36,306.43	34,226.96
Orthopaedics	1,43,828.57	1,62,871.43	2,00,333.33	1,58,500.00	1,66,631.82
Proctology	56,003.44	58,665.06	59,343.60	59,309.25	58,345.28
Urology	32,147.78	33,109.83	35,333.74	37,497.84	34,446.90
Vascular	63,747.70	69,123.78	72,563.15	78,061.98	70,453.41
Average Monthly ATS	57,099.41	57,925.96	62,925.53	57,940.66	59,122.65

- After calculating the ticket size for each category, monthly average ticket size was calculated which was then used to calculate the opportunity cost loss due to the cancellations both department wise and reasons for cancellations wise by compounding it with the number of surgery cancellations.
- The total cost for all surgery cancellation during the study period (Feb-April) was 859 Lakhs INR, out of this, 227 Lakhs accounted for the month of February, 301 Lakhs for the month of March and 330 Lakhs for the month of April.

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- The total cost for all surgery cancellation during the study period (Feb-April) was 859 Lakhs INR, out of this, 227 Lakhs accounted for the month of February, 301 Lakhs for the month of March and 330 Lakhs for the month of April.
 - Specifically, it was discovered that the maximum cancellation opportunity cost loss was associated with proctology procedures, which accounted for a loss of over 368 lakhs for cancelled cases, and that the least cancellation opportunity cost loss was associated with orthopedic procedures, which accounted for a loss of 5 lakhs from February to April.

Opportunity Cost loss (Digit in Rs.)				
Category	February	March	April	Grand Total
Aesthetics	8,29,901.04	29,02,131.41	21,24,908.16	58,56,940.61
ENT	10,43,926.49	8,42,647.35	12,49,458.47	31,36,032.32
General Gynaecology	3,16,625.00	94,159.89	2,95,236.84	7,06,021.74
Laparoscopy	18,64,270.75	22,41,176.57	33,53,464.29	74,58,911.61
Ophthalmology	10,45,797.50	11,81,128.48	7,53,787.14	29,80,713.12
Orthopaedics	1,43,828.57	1,62,871.43	2,00,333.33	5,07,033.33
Proctology	96,88,595.30	1,36,10,294.10	1,35,89,683.34	3,68,88,572.74
Urology	30,86,186.96	39,40,070.36	54,76,729.38	1,25,02,986.69
Vascular	34,42,375.66	42,85,674.26	53,69,673.20	1,30,97,723.12
Cosmetic Gynaecology	12,96,966.67	8,80,113.88	6,21,967.38	27,99,047.93
Grand Total	2,27,58,473.94	3,01,40,267.75	3,30,35,241.53	8,59,33,983.21

Opportunity Cost Loss (Digit in Rs.)				
Cancellation Reason	February	March	April	Grand Total
Clinical Reasons	23,16,369.21	15,94,935.81	13,77,033.43	52,88,338.46
Covid Fear	1,51,898.92	5,80,444.04	9,28,111.78	16,60,454.75
Discipline/Timing Factors	4,07,694.43	16,34,381.07	18,80,807.14	39,22,882.65
Infrastructure	16,21,746.80	13,78,327.06	20,24,855.28	50,24,929.14
Insurance/Fund Concern	63,36,829.00	81,86,101.60	1,09,84,371.73	2,55,07,302.33
Miscellaneous Factors	19,43,887.86	26,73,443.28	22,51,663.38	68,68,994.53
Not Happy Customer/Patient	99,80,047.70	1,40,92,634.88	1,35,88,398.77	3,76,61,081.35
Grand Total	2,27,58,473.94	3,01,40,267.75	3,30,35,241.53	8,59,33,983.21

- Among the opportunity cost loss 99 Lakhs(43.82%) was related to cancellation due to not convinced customer/patient (patient was not satisfied/convinced for surgery) and least that is 1Lakh 51 thousand (0.66%) was due to covid fear in the month of February.
- Similarly maximum cancellation opportunity cost loss was due to not happy patient(140 Lakhs) that accounted for 46.7% of all cancellations while the least was due to covid fear accounting for about 5 Lakhs(1.92%) in the month of March.
- April month accounted for highest cancellations due to not happy patient (135 Lakhs, i.e., 41.1%) and the least opportunity loss due to covid fear accounting for 9 Lakhs(2.8%).

Solution Implementation

- After analyzing the data from February to March, it came out that the opportunity cost was increasing every month due to the reasons which were avoidable, like cancellations due to not happy patients, insurance rejection/fund issues etc.
- Changes were made in terms of almost every reason possible for surgery cancellations. For example, third party assistance for EMI Services, Faster turnaround time for insurance approval-by process efficiency was carried out and implemented. Likewise, confidence building with patient-workshops for doctors were arranged and were educated about increasing the conversion ratio
- Similarly in cases of cancellations due to lack of infrastructure reasons were worked upon by onboarding better quality hospitals(Hospital preference by patient), Tying up with almost all partner hospital pan India etc.

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- Among cancellations due to discipline/timing factors, work was done on better scheduling of appointments, Provision of complete equipment's to doctors.
 - Timely investigations were carried on patient who were scheduled for surgery. Proper flow of information regarding pre-op instructions was done to the concerned teams.
 - Even during the tough times of covid, teleconsultation with patient was done and were convinced for surgery(if needed) according to the set protocols by ICMR.

Covid 19 Status	Symptoms	Quarantined	Elective Surgery After
Positive	Nil	At home	5-6 weeks
Positive	Mild	At home	5-6 weeks
Positive	Moderate	Hospitalized, in ward	10-12 weeks
Positive	Severe	Hospitalized, in ICU	After 12 weeks

Surgery Cancellations in May and opportunity Cost Loss

Category	May		Category	May
Aesthetics	31		Aesthetics	15,42,864.40
ENT	5		ENT	3,13,491.54
General Gynaecology	7		General Gynaecology	2,25,639.73
Laparoscopy	19		Laparoscopy	13,92,082.14
Ophthalmology	20		Ophthalmology	7,26,128.57
Orthopaedics	1		Orthopaedics	1,58,500.00
Proctology	170		Proctology	1,00,82,572.84
Urology	115		Urology	43,12,251.60
Vascular	55		Vascular	42,93,409.09
Cosmetic Gynaecology	19		Cosmetic Gynaecology	3,00,235.98
Grand Total	442		Grand Total	2,33,47,175.89

- Interventions were carried out on these reasons so as to minimize the loss further. Interventions were discussed and strategically implemented in the first week of May, and then the surgery cancellations were again tracked till the end of May.
- The total surgeries performed in May were 2223 and among that the cancellations were 442(19.8%).The cancellations in the month of February accounted for 504 cancellations among 2311 surgeries(21.8%),similarly march and April accounted for 617 cancellations among 2761 surgeries(22.3%) and 638 cancellations among 2451 surgeries respectively (26%)

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- The opportunity cost loss in May was 233 Lakhs as compared to the month of February, March and April which was 227,301 and 330 Lakhs respectively
 - The rate of surgery cancellations for February was 21.8% and 22.3%, 26% for March and April respectively. For the month of May after doing the required interventions the rate was 19.8%.

Surgery Cancellation in May and Opportunity Cost Loss			
Cancellation Reason	May	Cancellation Reason	May
Clinical Reasons	13	Clinical Reasons	7,40,032.82
Covid Fear	13	Covid Fear	6,34,265.37
Discipline/Timing Factors	14	Discipline/Timing Factors	7,90,973.34
Infrastructure	26	Infrastructure	14,59,117.75
Insurance/Fund Concern	135	Insurance/Fund Concern	72,89,842.88
Miscellaneous Factors	53	Miscellaneous Factors	28,46,732.21
Not Happy Customer/Patient	188	Not Happy Customer/Patient	95,86,211.51
Grand Total	442	Grand Total	2,33,47,175.89

Discussion

- The cancellation of the surgical procedure raises the institution's operational and financial costs, resulting in losses. Cost reduction through smart and efficient resource use has become an essential aspect of healthcare delivery across the world.
- Surgery is an essential function in hospitals since it produces a lot of revenue and admissions. Because of its consequences on health-care usage, surgery cancellation is increasingly being viewed as an unfavorable occurrence that has to be monitored on a regular basis
- Cancelling and postponing surgical cases increases expenses for physicians, hospitals, patients, and society. Because it is an economic consumption, this expenditure is connected to management inefficiency, and it indicates inefficacy because money that would have contributed to the outcome if the process had been performed was not created.

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- In this study, reasons of surgery cancellations were divided into seven main categories which were further subdivided as avoidable and unavoidable reasons. Around 60% of elective treatment cancellations might be avoided, according to estimates. We discovered that 84.3 percent of elective treatment cancellations might have been avoided in the current research.
 - These findings led to specific suggestions for minimizing surgical cancellations through the use of quality improvement approaches. In the study by Pollard and Olson in their study it was stated “that the DOS cancellation rate for outpatients was the same for patients evaluated within 24 hours of surgery versus those evaluated 2-30 days in advance”. The introduction of a pre anesthetic clinic for anesthesiologists to evaluate patients before to anesthesia has been shown to minimize DOS due to patient medical conditions.

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- The second price cause for cancellations was due to patients' decisions (44.8% percent of total cost), which was consistent with a Schofield research. Patient education is likely to prevent the majority of cancellations due to patient decision or failure to follow instructions.
 - 7.7% of total cancellations were for cost-cutting reasons with no recorded valid justification. It would be impossible to address the situation without understanding why the operation was cancelled.
 - Patients failing to show up for surgery is a common and difficult-to-manage reason for surgical cancellation on the day of the procedure- One possible approach is to call patients the day before surgery by phone or email to remind them of their appointment and confirm their willingness to attend. Although a cancellation the day before a surgery might be inconvenient for the surgical service provider, various adjustments can be taken to minimize the hardship.

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- Cancellations caused by failing to follow pre-operative instructions are often difficult to manage. As a result, it's important that these instructions are communicated in a way that the patients understand. Instructions should be given verbally, information booklets should be provided, and instructions should be reiterated throughout several pre-operative appointments, such as in the pre-assessment clinic.
 - With good collaboration and coordination, outpatient clinics, booking departments, pre-assessment clinics, anesthetists, and surgeons will be able to speed elective procedures and eliminate "bottlenecks" at various stages of the production line.
 - Hospital bed capacity planning and emergency demand projections are two methods for reducing elective surgery cancellations on the day of operation

Conclusion

- The cost of operation cancellation was found to be extremely high in Pristyn Care attached hospitals, according to the study. Over half of the cost of surgical cancellation (84.3%) was attributable to preventable factors. To avoid cancellations, all patients have preoperative appointments.
- Hospitals should concentrate on the operations that result in the most losses, such as proctology, urology and vascular surgery procedures.
- The study showed high cancellation rate of day care surgery cases, which is primarily owing to preventable reasons. To maximize the benefits of day surgery practice, it is advised that patient and physician education, as well as the supply of suitable materials and infrastructure development, be provided.

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- The research offers a number of examples of effective and failed techniques for reducing surgical cancellations, even when they are caused by unavoidable reasons. While certain solutions to these problems, such as the establishment of pre-assessment clinics, may be costly to execute, the advantages of fewer hospital cancellations exceed the costs.
 - Despite the broad range of patient demographics and practice conditions, early communication between doctors and patients can certainly minimize day of surgery cancellation and a final assessment of medical and surgical evaluations by all providers the day before the procedure. It is strongly suggested that a comparable research be undertaken in other hospitals to see if they have comparable issues.

**THANK
YOU!**