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Sandhyamika Devi

(PG/16/051)

PGDHHM

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LIST OF ABBREVIATIONS

RPN – Robotic Partial Nephrectomy
LPN – Laparoscopic Partial Nephrectomy
OPN – Open Partial Nephrectomy
RAPN – Robot assisted partial Nephrectomy
NHS – National Health system
ORP– Open Radical prostatectomy
LOS – Length of stay
OT – Operating time
POC – Post op complication
BPH- Benign Prostate hyperplasia
TURP- Transurethral prostatic resection
RIRS- Retrograde intrarenal surgery
URSL- Ureteroscopic lithotripsy
ESWL-Extracorporeal shock wave lithotripsy

ORGANIZATION STRUCTURE

Sanjevani Hospital a group of Pragjyotishpur Hospital & Research Centre Pvt Ltd an ISO 9001 2008 certified Modern Multispecialty Hospital located at A T Road Maligaon, Guwahati, Assam. This hospital has been planned and designed as a 50 bedded tertiary care multi-specialty facility. The Sanjevani Hospital is constructed across a sprawling 1acre campus which is 50 bedded having 08 OTs, 6 bedded ICU and 5 bedded NICU/PICU with easily accessible from entire North East.

VISION

To be the most trusted name in the field of quality health care in this region.

MISSION

To spread, provide and improve quality health service.

SERVICES PROVIDED

Our - Institute of Orthopaedics & Joint Replacement:

- Total Replacement Surgery
- Joint Replacement Surgery
- Shoulder and Elbow surgery
- Spine Surgery
- Sports Medicine
- Orthopaedic Trauma

Our – Centre for advanced Urology & Kidney diseases:

- LASER guided Urology Surgery
- Bladder augmentation
- Cystectomy
- Lithotomy
- Nephrectomy
- And others …

Facilities available at a glance:

- Services for both OPD and IPD

- Internal Medicine
- Orthopaedic surgery
- Urology
- Surgery
- Cardiology
- ENT & Head and Neck
- Oncology
- Paediatrics & Neonatology
- Gynaecology & Obstetrics
- Infertility management
- Plastic & Cosmetic surgery
- Dentistry
- Psychiatry
- Burns & Maxillo facial surgery etc.

Diagnostics

- Multi slice CT scan
- Fully computerized pathology department
- Fully equipped radiology department
- Hormone analyzer& cell counter
- Cardiological investigation (TMT, ECHO cardiography, ECG, Holter)
- Audiology department (Audiometry, Impediance, ENG, BERA, etc)
- EEG, etc.
- Endoscopy (upper GI, colonoscopy, broncoscopy, laryngoscopy, etc.)Support Services
- Food and nutrition
- Free parking
- 24 hours BLOOD BANK
- 24 hours Pharmacy
- Physiotherapy & Rehabilitation
- Speech therapy
- Health Insurance / TPA Service

Others

- Operative service: 2 major OT for general surgery / 2 major OT for orthopaedic surgery / 3 minor OT / 1 labour OT.
- Intensive care unit: Six bedded state of the art ICU.

- Neonatal ICU: Five bedded NICU / PICU.
- General wards / semi cabins / single cabins (AC / Non-AC).
- Centralized AC lobby

Floor Plan

Sl no	Particulars	Floor
1	Main store, office, accounts, server room, MD's room	Basement
2	OPDs, Pharmacy, Reception, Case counter, Emergency, Radiology, Collection centre	Ground Floor
3	OT(Major 2)(Minor 3),ICU, Recovery	1st Floor
4	OPD, Ward General, Cabin, NICU	2nd Floor
5	Cabins	3rd Floor
6	Cabins	4th Floor
7	OT, Lab, Blood Bank, OPD	5th Floor
8	Auditorium	6th Floor

Table: -2.1

HUMAN RESOURCES

Sl no	Deptt	Manpower
1	Laboratory	4
2	Blood bank	4
3	Radiology	2
4	Housekeeping	13
5	Emergency	9
6	Residant Doctor	6
7	Consultant	12
8	Visiting Consultant	15
9	Office & Accounts	5
10	Maintanance	2
11	Reception & Cash	5
12	Pharmacy	1
13	Store	9
14	ICU	9
15	OT	9
16	Nursing & Ward (1st,2nd & 3rd floor)	12

Table: -2.1

INTERNSHIP CUM DISSERTATION REPORT

(Feb 2018 – April 2018)

BACKGROUND

Innovation has resulted in far reaching improvement in healthcare delivery worldwide. Advances in technology allow mankind to accomplish tasks in ways that weren't possible earlier. The technology has often been called a great leveller. It has managed to reduce cost & improve access for the disadvantaged, but not always in healthcare. The advent of newer technologies has made treatments more expensive. In fact regular technological advancements and innovation and their uses and acceptance universally have been a key driver for making urological procedures expensive with each passing day.

But it has been seen that the cost of care in urology have increased due to technological innovation, the advances in patient care have been worth more than the increasing expense. Urology as a speciality is extremely technology dependent that incorporating and implementing innovation from endoscopy to lasers and robotics. The ideal criteria for promoting new technologies should be based on scientific evidence. Urology is one of the surgical specialties in the field of medicine which focuses on conditions that affect the female and male urinary tract. Urologists can specialize in pediatric urology, urologic oncology, renal transplantation, male infertility, urinary tract stones, female urology or laparoscopy. Various instruments are used in the diagnosis, treatment, and management of urological conditions. Urology equipment has changed over the years as technology advances. Traditional procedures have improved with the introduction of new instruments. Here are some of the most common instruments used in this specialty are laparoscope, lithotripter, nephroscope, resectoscope, ureteroscope, cystoscope etc. Understanding the various catheters, guide wires, stents, endoscopes, and associated instrumentation is key in helping physicians accomplish their desired tasks.

OBJECTIVES

Objective:-

General Objectives:-

- To compare the older surgical approach & newer surgical approach in urological care.

Specific Objectives:-

- To compare the cost of procedures with respect to the older surgical approach & newer surgical approach.
- To assess the average length of stay.
- To analyze the operative time between the two approach.
- To evaluate the no of post op complication performed by the two different surgical approach.

RATIONALE

From the days of ancient times surgeries were practised to care disease, relief symptoms. From that time of indigenous surgery to present days of advanced surgery things and technologies have been changing with each passing day along with. The human suffering has also decreasing by manifold. The newer methods are coming at price. In present scenario urology is a branch where maximum instrumentations are required and as a result the operations becoming minimally invasive and costlier. So it is required to study the cost of both older method and newer method.

REVIEW OF LITERATURE

With the increasing number of instruments and up-to-date technology patients are getting benefitted with quality care and surgeons also could serve with full satisfaction and fruitful result of respective surgeries with the help of sophisticated instruments.

Yee DS et al (2006) Initial comparison of robotic-assisted laparoscopic versus open pyeloplasty in children, conducted study in patients undergoing pyeloplasty. Stated that Robotic pyeloplasty is more expensive, but has a lower (although non-significant) rate of complications and a significantly shorter length of stay. Charges for OR and anesthesia time, costlier instruments dominate the cost difference; so efforts to reduce these specific costs should be the focus of future cost-containment efforts.[1]

In 2012, Wei Zheng et al Guillotreau et al. compared 45 laparoscopic cystectomies with 65 open cystectomies and found Laparoscopic cystectomy can reduce intraoperative blood loss significantly. Open cystectomy requires less operative time and has a lower cost than laparoscopic cystectomy for bladder cancer. There was no statistically significant difference in postoperative complication rates in the hospital between the two groups[2] .

Humberto Laydner et al concluded in study Single Institutional Cost Analysis of 325 Robotic, Laparoscopic, and Open Partial Nephrectomies RPN had higher operating room costs than LPN and OPN, primarily due to instrumentation and supplies. This higher cost was offset by decreased cost of hospitalization in compared with the OPN group. Modification of practices aimed at lowering RPN instrumentation and supply costs may enable cost equivalence.[3]

In 2013, Katherine Moore et al evaluated comparing two procedures such as Prospective cost analysis of laparoscopic vs. open pyeloplasty in children over a 1-year period and found pediatric laparoscopic pyeloplasty is more expensive than the open technique. This cost difference is mainly due to operating room time. For cost-containment purposes, efforts aimed at increasing efficiency in the operating room may help equalize both approaches. [5]

In 2012, Ahmed K et al stated in a systematic review Assessing the cost effectiveness of robotics in urological surgery - a systematic review stated that Laparoscopic and robot assisted radical prostatectomy are superior with respect to reduced hospital stay (range 1-1.76 days and 1-5.5 days, respectively) and blood loss (range 482-780 mL and 227-234 mL, respectively) when compared with the open approach (range 2-8 days and 1015 mL). Robot assisted radical prostatectomy remains more expensive (total cost ranging from US $2000-$39,215) than both laparoscopic (range US $740-$29,771) and open radical prostatectomy (range US $1870-$31,518). This difference is due to the cost of robot purchase, maintenance and instruments. The reduced length of stay in hospital (range 1-1.5 days) and length of surgery (range 102-360 min) are unable to compensate for the excess costs. Robotic surgery may require a smaller learning curve (20-40 cases) although the evidence is inconclusive.[4]

In 2016,Hughes D et al reviewd to evaluate postoperative health resource utilisation and secondary care costs for radical prostatectomy and partial nephrectomy in National Health Service (NHS) hospitals in England, via a comparison of robot-assisted, conventional laparoscopic and open surgical approaches of 23 735 patients who underwent robot-assisted (RARP, n = 8 016), laparoscopic (LRP, n = 6 776) or open radical prostatectomy (ORP, n = 8 943) and further analysed 2 173 patients who underwent robot-assisted (RAPN, n = 365), laparoscopic (LPN, n = 792) or open partial nephrectomy (OPN, n = 1 016). Postoperative inpatient admissions, hospital bed-days, excess bed-days and outpatient appointments at 360 and 1 080 days after surgery and found as result RARP leads to reduced long-term health resource utilisation and downstream cost savings compared with traditional open and laparoscopic approaches. Furthermore, despite the limitations that arise from the inclusion of a small sample, these results also suggest that robot-assisted surgery may represent a cost-saving alternative to existing surgical options in partial nephrectomy. Further exploration of clinical cost drivers, as well as an extension of the analysis into subsequent years, could lend support to the wider commissioning of robot-assisted surgery within the NHS.[6]

In 2017,Sukhchain S Bansal et al concluded in their study cost analysis comparing the cost of robot-assisted radical cystectomy (RARC) with open RC (ORC) in a UK tertiary referral centre and to identify the key cost drivers on the parameters such as hospital length of stay (LOS), operative time (OT), transfusion rate, and volume and complication rate were obtained from a prospectively updated institutional database for patients undergoing RARC or ORC and concluded that High ongoing equipment costs remain a large barrier

to the cost of RARC falling. However, minimal improvements in patient quality of life would be required to offset this difference.

METHODOLOGY

Study Design:- Comparative study.

Study Population :- No surgeries done between 2008 to 2018(A total 109 surgeries,60 surgeries with newer surgical approach & 49 surgeries done with older surgical approach).

Study Location :- Sanjevani Hospital,Guwahati.

Study Duration:- Feb 2018 to April 2018.

Study Variables :-Charge of procedures, POC(post of complication),OT(operative time),LOS (Length of stay).

Sources of Information

Data Collection Method
Secondary Data from

- Review of patient's record.
- Review of Inpatient record maintained at hospital.

Patient demographics		
Particulars	**Older Surgical Approach**	**Newer Surgical Approach**
No of patients	49(45%)	60(55%)

Table:- 1.1

RESULT/FINDINGS

Cost of procedures

Procedures	Older surgical Approach	Newer Surgical Approach	Difference between the approach
Pyeloplasty	40000	110000	70000
Cystectomy	140000	150000	10000
Lap Ureterolithotomy/URSL	60000	85000	25000
Open surgery/RIRS (for ureteric stone)	50000	115000	65000
TURP/Thulep(for BPH)	60000	120000	60000
ESWL/RIRS (for kidney stone)	25000	120000	95000
Open Pyelolithotomy/PCNL(for kidney stone)	50000	80000	30000

Table: -2.1

Length os stay(LOS)			
Procedures	**Older surgical Approach**	**Newer Surgical Approach**	**Difference between the approach**
Pyeloplasty	4	3	1
Cystectomy	3	2	1
Lap Ureterolithotomy/URSL	3	3	0
Open surgery/RIRS (for ureteric stone)	5	1	4
TURP/Thulep(for BPH)	4	0	4
ESWL/RIRS (for kidney stone)	2	0	2
Open Pyelolithotomy/PCNL(for kidney stone)	5	0	5

Table: -3.1

OT			
Procedures	**Older surgical Approach**	**Newer Surgical Approach**	**Difference between the approach**
Pyeloplasty	105	140	35
Cystectomy	360	400	40
Lap Ureterolithotomy/URSL	50	55	5
Open surgery/RIRS (for ureteric stone)	95	200	105
TURP/Thulep(for BPH)	70	100	30
ESWL/RIRS (for kidney stone)	60	120	60
Open Pyelolithotomy/PCNL(for kidney stone)	80	130	50

Table:-4.1

P value of variables

Study Variables	P value
Cost	0.004
LOS	0.01
OT	0.007
POC	0.01

Table: -5.1

- Highest cost difference 95000/-(ESWL/RIRS) & Lowest cost difference 10000/-(Lap Ureterolithotomy/URSL
- Length of stay 5 days of open pyelolithotomy whereas o length of stay for PCNL procedure.(5/0)
- Operating time is high in respect of newer surgical approach than open surgery.
- There is no difference between open ureterolithotomy and URSL(2/2).But vast difference between Open surgery/RIRS(4/1) & TURP/Thulep (3/0).
- All the variables are statistically significant (<p value) between the older surgical approach and newer surgical approach.(table 6.1)

CONCLUSIONS

According to our study, we conclude that: Endoscopic, Laparoscopic and laser is more expensive than open surgery. This cost difference may be due to more operative time, advanced and sophisticated instruments, equipments and supply costs since most of the time equipments, instruments are imported from abroad, but despite of higher costs the modern urology treatment has great impact in healthcare which helps to bring quality of life of the patients. This cost difference is mainly due to instrumentation. For cost-containment purposes, efforts should be aimed at increasing productivity of instruments in our country may help equalize both approaches.

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