

# Types of various surgeries in Day Care: A study from South India

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## Abstract

**Aim:** Recent studies have shown day care surgeries play a major role in health care industry. We evaluated the profile, the time spent and the care provided to patients who underwent day care surgeries performed in the Department of General surgery at a tertiary care center.

**Patients and Methods:** We analyzed all patients who underwent day care surgeries at Yashoda hospital and study period from July 2012 to June 2014.

**Results:** Out of 1502 patients who were treated in the Department of General Surgery, 155 patients underwent day care surgeries. Among the 155 patients men were 95(61.2%), women were 49(31.6%), and 16(10.3%) were children. All patients went home between 8.5-23 hours after hospital admission and mean time to discharge was

20.5 hours. Age ranged from 15-72 years and mean age was 45.6 years. The procedures performed included surgery for inguinal hernia in 40(25.8%), excision biopsy /cyst excision in 51(32.9%), fissurectomy in 15(9.6%), elective appendectomy in 15(9.6%), hydrocele in 8(5.1%), surgery for umbilical hernia in 5(3.2%) and circumcision in 7(4.5%) patients. On evaluation of complication assessed at follow-up after 7 days, 4(2.5%) had re-infections, 5(3.2%) had pain at surgery site and 1(0.6%) patient required re-admission.

**Conclusions:** Our study showed that day care surgeries are effective with low rates of complications. In our centre, this constituted 10.3% of all surgeries. Patients and surgeons require awareness for day care surgeries to reduce the time spent in hospitals and to be cost effective.

**Keywords:** Day care surgery, Yashoda hospital, Secunderabad, General surgery.

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## Introduction

The health care industry has faced several developments and changes in the last two decades. At present health care system is being motivated by factors such as financial management, patient satisfaction with health care and time management. Recent studies have indicated that day care surgery or ambulatory surgery (AS) can offer significant advantages over inpatient surgery [1]. In the USA, it is estimated that around 60% of nonsurgical and surgical procedures are performed as day care [2]. The increased outpatient procedures or day care surgeries has largely been motivated by advances in medical technology and changes in payment process, which have allowed the ambulatory/outpatient surgery to become more lucrative in recent years [3]. In medical insurance driven health service areas such as the USA, there has been increase from 35% in the 1970s to now 95% payers who cover day care surgeries [4]. In India day care surgeries are still a new concept in health care [5]. Elective surgical procedures in selected patients can be performed easily and patients can safely return home on the same day. This saves time and finances of the patients and their families as well as decreases the burden on tertiary hospitals. The aim of the present study is to retrospectively analyze the various surgical procedures performed in the day care unit of the surgery department.

## Patients and Methods

This study was retrospectively conducted in the Department of Surgery at Yashoda hospital Hyderabad. Yashoda hospital is a referral center in South India, the state of Andhra Pradesh and Telangana and study period between June 2012 and May 2014. During the two years 1405 surgeries were carried out at Department of Surgery. Out of these only 175 patient day care surgeries were performed. Among 175 patients, 155 patients had details of their follow up at one week

after surgery and were included, while the remaining 20 patients were lost to follow-up.

We collected all the patient's medical histories, type of surgeries performed and the time of their stay from the hospital medical records and follow-up on 3rd and 7th day of post operative. This study was approved by Institutional Scientific committee (ISC). A day care surgery is defined as a procedure in which the patients undergo elective operation on the day of their admission and are discharged within 24 hours after surgery [6].

### Including criteria

Patients who fulfilled the criteria of day care surgery and had regular follow-up on 3rd and 7th days post surgery.

### Excluding criteria

Patients with more than 24 hours stay in the hospital and those with incomplete follow up data were excluded from the study.

### Follow-up Postoperative care

Post operative examination of all day care surgery patients were performed at 3rd and 7 day for outcome and complications such as infection, re-admission or pain at surgery site [7,8].

### Statistical analysis

All patients' data was incorporated in database for data analysis. Data analysis was performed using Statistical Package for the Social Sciences (SPSS) statistical package (version 16). Continuous variables were analyzed as means  $\pm$  standard deviations and categorical variables were analyzed.

## Results

In our study, men were 95(61.2%) children 16(10.3%) and women were 49(31.6%), age range 15-72 years and mean age was 45.6 years. The mean time to discharge from admission was 20.5 hours and discharge time ranged from 8.5–23 hours (Table.1).

The most common surgeries performed in day care were excision biopsy /cyst excision in 51(32.9%) patients followed by surgery for inguinal hernia in 40(25.8%) patients. The other surgeries included elective appendectomy in 15(9.6%) patients, fissurectomy in 15(9.6%) and breast lumpectomies in 5(3.2%) (Table 2).

In follow-up period, at 7th day we found four patients had infection(one in umbilical hernia, two in excision biopsy /cyst excision, one in abscess removal) one patients had re-admission and five patients had pain at surgery site (Table 3).

## Discussion

In our study, we noted that only 9.7% of day care surgeries were carried out at department of surgery in our hospital. This

is in contrast to the west, where more than half of all general surgeries are performed as day care[9]. The percentage of daycare surgeries in UK is around 50% while they constitute 60% of cases in USA[10,11]. Glass et al noted in his study that only high risk surgeries like umbilical hernia, transurethral prostate resection and haemorrhoidectomy are performed in lower percentage as day care surgeries[4].

In India, day care surgeries still constitute less than 15% among all surgical specialties[12]. In our study, we found that approximate 30% of all day care surgeries are related to excision biopsy /cyst excision, while 25.8% are surgeries pertain to inguinal hernia.

### Hernia repair

Hernia repair is one of the common general surgical procedures worldwide. In our study day care laparoscopic hernia repair was conducted only in 10 patients (6.4%) while open surgeries was performed in 25% as day care surgeries. This is a very low number when compared to the rest of the world[13]. Almost all hernia repairs are now being performed as day care surgeries in many countries, 90% in United States, 80% in Denmark, 78% in Canada, 75% in Sweden and 70% in Norway. However the other European countries have a more conservative approach with a lower percentage i.e., 50%

**Table 1** Baseline Characters.

Parameters	Numbers (n=155)
Men	95(61.2%)
Women	49(31.6%)
Children	16(10.3%)
Mean age	45.6±4.5
Age range	15-72
Mean time of discharge(hours)	20.5±2.4
Time range discharge (hours)	8.5-23
Cash paying	140(90.3%)
Incurrence/Government paying	15(9.7%)
Low Socioeconomic	120(77.4%)

**Table 2** Types of procedures in day cases.

Types of surgeries	Number (n=155)
Inguinal Hernia	40(25.8%)
Umbilical Hernia	5(3.2%)
Hernia repair	10(6.4%)
Abscess removal	3(1.9%)
Hydrocele	10(6.4%)
Excision biopsy /cyst excision	45(29%)
Hemorrhoidectomy	6(3.8%)
Breast Lump	5(3.2%)
Elective appendectomy	10(6.4%)
Fissurectomy	15(9.6%)
Circumcision	7(4.5%)

**Table 3** Complications during follow-up at 3rd and 7th day.

Types of surgeries	Re-infections		Re-admissions		Pain at surgery site	
	3rd day	7th day	3rd day	7th day	3rd day	7th day
Umbilical Hernia	0	1(0.6%)	0	0	0	0
Inguinal Hernia	0	0	1(0.6%)	0	0	0
Excision biopsy / cyst excision	2(1.2%)	0	0	0	1(0.6%)	0
Hemorrhoidectomy	0	0	0	0	2(1.2%)	0
Abscess removal	1(0.6%)	0	0	0	0	0
Elective appendectomy	0	0	0	0	2(1.2%)	0
Total number	3(1.8%)	1(0.6%)	1(0.6%)	0	5(3.2%)	0

in Finland, 45% in England, 40% in Netherlands, 30% in Italy, 20% in Belgium and 25% in Hong Kong and [14,15]. This is a credit to the fact that inguinal hernia repair performed as a day care had low rate of complications [16,17]. In our study also we found not mortality in inguinal hernia.

### ***Pediatric surgery***

Pediatric day care surgeries are widely accepted and practiced in developed and developing countries. 18 In our study, 9 (5.8%) elective appendectomies 4(2.5%) circumcisions and 3(1.9%) hydrocele surgeries were performed as day care surgeries. Managing pediatric patients is more time consuming and the apprehension of parents may contribute to the low numbers of surgeries. In a recent study on pediatric day care surgeries, 17.1% in patients had earlier operations when they were admitted for herniotomy and lump excision [18]. In Europe and North America pediatric day care surgeries are being increasingly performed in many case and follow-up is done by family physician or general practitioners in the community or by telephone [19].

### ***Mean length of staying***

In our study, the mean length of hospital stay was  $20.5 \pm 2.4$  hours and ranged from 8.5–23 hours. Similar findings have been noted by Phillips et al who demonstrated a hospital stay range of 05–23 hours [20] and Pota et al noted 5-15 hours [8]. Gupta et al showed stay range 4-21 hours and mean stay 7.3 hours [21].

### ***Follow-up***

In our study we established a low rate of over all complication at follow-up (6.4%) at 7 days without any mortality after day care surgery. This was advocated by Ramyil et al who also compared and found significantly lesser complication in day care surgeries compared to in-patients surgery [16]. However Russell et al and Kornhall et al in their studies found no significant difference in postoperative complications in between day care surgeries and in-patients surgeries [22,23].

### ***Pain at surgery site***

Pain is one of the complications feared by patients and attendants post operatively. This often may lead to patients opting for inpatient services for access to injectable pain killers. In our study we found severe pain at surgery site was complained by only 3.4% of all day care surgery patients. Similar reports of low incidence of severe pain have been demonstrated in other studies [7,8,14,18]. On the other hand a decade earlier, Beauregard et al has found in his study that 25% of all patients with day care surgery had moderate to severe pain [24]. Further the persistence of pain was related to the effective pain management in the first few hours after the surgery [24]. The improved rates may be due to better case selection and may be due to newer and more potent analgesic use in the recent times. Still it is important to evaluate and effectively manage post operative pain for gaining the most benefit from day care surgeries.

### ***Infection***

Our study noted infection at site of surgery in 3 patients (1.8%) – these included patients with excision biopsy and abscess drainage. This is similar to previous findings by other researchers [8,13,21]. The infection rates in previous studies from Asia are however higher with reported prevalence of 7.7% by Pardhan et al [25]. The rates of infection may be influenced by the socio-economic status, hygienic practices and the type of surgeries performed.

### ***Readmission***

The present study revealed a readmission rate of 0.6% after day care surgeries. Worldwide the re-admission rates range from 0.28% to 3.6% in day care surgeries [13,15,26]. Generally most patients get readmitted for pain or other complications. Only a small proportion

of them have requirement for redo surgery and this has been noted in patients after hernia repair [7,13].

### ***Mortality***

In our study over 2 years, mortality was 0% after day care surgery, our study findings are advocated by others. 14 A recent study showed mortality in day care was extremely low (<1%) [15]. The cases eligible for daycare surgeries, the techniques used are all geared towards low mortality and thus this awareness should be imparted to patients or patient caregivers to increase the utility of day care surgeries [27].

In our study we noted minor complication in around 25% of day care patients such as headache, nausea, vomiting, sore throat fatigue and drowsiness. These are common symptoms and in our study did not affect the activities of daily living in most patients. Occasionally the presence of these symptoms can affect the length of stay and time to discharge and cause difficulties in daily activities at home [15]. A proper counselling regarding these symptoms pre-operatively can help patients cope better.

### ***Pitfalls of study***

In our study we assessed the prevalence of day care surgeries being performed in a tertiary care hospital. We only included the ambulatory surgeries being conducted at surgical department, we did not include departments such as orthopaedics. We have not analyzed the other aspects of the surgery such as mean duration of surgery, the length of the surgery. Although all patients were evaluated and received appropriate analgesic care, we have not analyzed the various analgesics protocol being followed at our institute. Another drawback is that we could not compare between inpatients and day care surgeries in terms of cost effectiveness and patient satisfaction as it was a retrospective study.

## **Conclusion**

In our study, during the two year study period we performed only 9.5% day care surgeries in surgery department. Compared to Europe and USA studies our performance is low. Our study has established that day care surgeries can be performed with very low morbidity and no mortality in India.

In the present scenario day surgeries play a vital role in the health care industry and it will be an integral component of health care in the future. A day care surgery places different demands on various skills of each specialty (surgical and non-surgical) involved and especially requires special effort in anaesthesia and nursing care. It is increasingly seen as a better option with lesser difficulties for patients with ambulatory surgeries compared to inpatient surgeries. Worldwide, the surgeons are geared to counsel patients to undergo day care surgeries and health care providers have started creating the environment conducive for day care surgeries in all specialties. Carey et al noted in his study the emergence of day care surgeries which are like “focused factories”, specialized in treatment of specific diseases meted as a single line of service [28].

The advantage of day care surgeries are that they have higher efficiencies and lower costs, with ease of hospital accommodation and lesser time spent in waiting. Day care results indicate quicker and faster recovery. Patients can easily return to their normal environment i.e., return home and do their daily activities. The major advantage is reduced risk of cross-infection or hospital acquired infection and minimal anaesthesia related complication. Day care surgeries are comparatively inexpensive and affordable in all socioeconomic classes. Another benefit for the patients is the possibility to book a procedure on a dedicated day for surgical procedure without the fear of cancellation of surgery due to emergencies or shortage of beds in hospitals. Health care providers benefit from day care procedure for patients as the turnover is faster and more patients can be

accommodated with reduced waiting lists. Surgeons satisfaction is also very high, they can rapidly provide high quality care for appropriate patients and plan surgical procedure according to their needs and allot only major surgeries as inpatients.

The drawback of day care surgeries are that they only selective cases can be performed and most of them are elective not emergency cases. As planned surgeries, it is required for patient or patients relatives to be aware of the surgery or procedure and care required at first 24–48 hours after surgery at home especially in children and elder age group. Another drawback is large number of patient admitted in outpatient department make it difficult for surgeon to separate the patients into those fit for day care surgery and patient counseling. The patients factors play an important role in day care surgery like age and sex. After surgery patient follow up is required up to 7 days with easy access to a telephone and if required repeat hospital visit for any adverse reactions.

Indian Association of Day Care Surgery started in 2003 but still it is in its infant stage. The major reasons seem to be a lack of awareness of the facilities among patients and their relatives, fear of complications, distance of hospitals from their residence as well as lack of health professionals geared to offer these procedures. Health insurance companies in India also lack the insight to provide for day care surgeries and insist on more than 24 hours admission to avail the claim. In our center day care patients were mostly cash payers (90.3%) and very few got paid under state or central government health schemes (9.7%). In USA and Europe, the successes of day care surgeries have helped in including them under insurance coverage without any payment obstacles.

India is a large country with limited health care resources catering to a huge population. There is an immediate need for more dedicated day care centers for rapidly helping the patient load. There is also a requirement for increasing awareness programs for patients and health care providers in the Indian sub continent. The appropriate training should be initiated early in the medical colleges with frequent CME (continuing medical education) programmes for doctors and other health care personnel to continue awareness should be conducted often.

## References

1. Abusalem OT. Day case versus inpatient surgery in Gaza Jordanian Military Field Hospital. *Rawal Medical Journal*. 2012;**37**:421–424.
2. Farhan H, Moreno-Duarte I, McLean D Eikermann M. Residual Paralysis: Does it Influence Outcome After Ambulatory Surgery? *Curr Anesthesiol Rep*. DOI 10.1007/s40140-014-0073-6.
3. Sharmitaro A, Scilcr R. Outpatient Surgeries Show Dramatic Increase. *Health Capital Topics*. 2010;**3**.
4. Glass PSA, The future and safety of ambulatory surgery. *South Afr J Anaesth Analg* 2014;**20**:59–61.
5. <http://www.iaas-med.com/files/Journal/March10/ROW.pdf> accessed date 10.08.2014.
6. Masson JL. Outpatient hemorrhoidectomy using the CO2 laser. *J Chir* 1990; **127**:227–229.
7. Legbo JN, Opara WE. Day care plastic surgery in Nigeria: Coping with limited resources. *Annals of African Medicine*. 2005;**4**:14–18.
8. Pota AQD, Wagho NA, Soomro AH. Day Case Surgery: An Experience at General Hospital. *JLUMHS*. 2013;**12**:60–63.
9. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb86.pdf> accessed date 10.09.2014.
10. British Association of Day Surgery. *BADS Directory of Procedures*, 3rd edn. London: BADS, 2009.
11. Hanousek J, Stocker ME, Montgomery JE. The effect of grade of anaesthetist on outcome after day surgery. *Anaesthesia* 2009;**64**:152–155.
12. Kalande L, Nassali G, Kituuka O Day Care Surgery: The Norm for Elective Surgery. *East and Central African Journal of Surgery*. 2005;**10**:1–4.
13. Lau H, Lee F An audit of the early outcomes of ambulatory inguinal hernia repair at a surgical day-care centre. *HKMJ* 2000;**6**:218–20.
14. Saia M, Mantoan D, Buja A, Bertocello C, Baldovin T, Zanardo C, Callegaro G, Baldo V. Increased rate of day surgery use for inguinal and femoral hernia repair in a decade of hospital admissions in the Veneto Region (north-east Italy): a record linkage study. *BMC Health Serv Res*. 2013 Sep 12;**13**:349. doi: 10.1186/1472-6963-13-349.
15. [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0011/108965/E90295.pdf](http://www.euro.who.int/__data/assets/pdf_file/0011/108965/E90295.pdf) accessed date 12.08.2014.
16. Ramyil VM, Iya D, Ogonna BC, Dakum NK. Safety of day care hernia repair in JOS Nigeria. *East African Medical Journal*. 2000; **77**:326–328.
17. Goyal P, Sharma SK, Jas KS Comparison of inguinal hernia repair under local anesthesia versus spinal anesthesia. *Journal of Dental and Medical Sciences*. 2014;**13**:54–59.
18. Abdur-Rahman LO, Kolawole IK, Adeniran JO, Nasir AA, Taiwo JO, Odi T. Pediatric day case surgery: Experience from a tertiary health institution in Nigeria. *Annals of African Medicine*. 2009;**8**:163–167.
19. Correa R, Menezes RB, Wong J, Yogendran S, Jenkins K, Chung F. compliance with postoperative instructions: a telephone survey of 750 day surgery patients. *Anaesthesia* 2001;**56**:270–5.
20. Phillips D, Healy J, McWhinnie D, Caballero C, Soutar R Extended day surgery. *Journal of One-day Surgery* 1999;**8**:5–6.
21. Gupta PJ. Feasibility of Day Care Surgery in Proctology. *J Gastrointest Liver Dis* 2006;**15**:359–362.
22. Russell J.T., Devlin H.B., Feel M., Glass N.J. and Newell D. Daycare Surgery for hernia and haemorrhoids. *Lancet* 1977;**1**:844–847.
23. Kornhall S. and Olsson A.M. Ambulatory inguinal hernia compared with short stay. *Amer. J Surg*. 1976;**132**:32–33.
24. Beauregard L, Pomp A, Choiniere M. Severity and impact of pain after day case surgery. *Can J Anaesth* 1998; **45**: 304–311.
25. Pardhan A, Mazahir S, Alvi AR, Murtaza G. Surgical site infection following hernia repair in the day care setting of a developing country: a retrospective review. *J Pak Med Assoc*. 2013;**63**(6):760–2.
26. Ghosh S, Sallam S, patients satisfaction and post operative demand on hospital and community service after day surgery. *Br J Surg* 1994; **81**:1635–38.
27. Lewis S, Stocker M, Houghton K, Montgomery JE. A patient survey to determine how day surgery patients would like preoperative assessment to be conducted. *Journal of One-day Surgery* 2009; **19**:32–36.
28. Carey K, Burgess JF Jr, Young GJ. Hospital competition and financial performance: the effects of ambulatory surgery centers. *Health Econ*. 2011;**20**:571–581.