

# Routine Vs Day-Care Surgery in Case of Unilateral Inguinal Hernia in Public Hospital Setting

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## Abstract:

**Background:** Day-Care Surgery is defined as planned investigations or procedures on patients who are admitted and discharged home on the day of their surgery. While Routine Care Surgery is any surgery where the patient needs to remain overnight or longer after the surgery is completed, for care or observation.

**Patients and Methods:** In this prospective and observational study on 200 patients, 100 day-care & 100 routine-care patients who underwent treatment of unilateral inguinal hernia at Kirkuk General and Azadi Teaching Hospitals.

**Aims of the study:** We aim to study and compare the immediate and long-term post-operative complications and patients' satisfaction between the two procedures (day-care and routine-care procedures) and to assess the feasibility of day-care surgeries in governmental institutes.

**Results:** In this study, 4 out of 100 (4%) day-care surgery patients had to be kept for more than 23 hours. But only 2 (2%) patients were readmitted.

The immediate post-operative and at the end of 7th post-operative day complications were in fact lower than routine-care surgery.

Majority of patients (94%) were satisfied from the surgery and preferred day-care surgery to routine-care.

Also, the success rate, complication rate and patient satisfaction were comparable with specialized day surgical unit treating for inguinal hernia.

**Conclusion:** From our study, we conclude that even with the shortcomings of the public health care setup of developing nation, the day-care hernia repair can be done without any major immediate or long term complication as compared to routine-care surgery.

**Keywords:** Day-care surgery, Routine-care Surgery, Inguinal Hernia.

## Introduction:

Day-care surgery is defined as planned investigations or procedures on patients who are admitted and discharged home on the day of their surgery but who require some facilities and time for recovery<sup>(1)</sup>.

Routine care surgery is any surgery where the patient needs to remain overnight or longer after the surgery is completed, for care or observation. Surgeries with larger incisions are more likely to require an overnight stay or

even an extended stay in the hospital. This would include procedures like open heart surgery, brain surgery, major abdominal surgery, joint replacements and lung procedures. Also any minor surgery, as unilateral inguinal hernia, associated with medical problem that require prolonged or even overnight stay in the hospital, like patients suffering from uncontrolled diabetes, hypertension, or chronic obstructive pulmonary disease (COPD).

In most countries this means that the patient spends a few hours in hospital and does not stay overnight. However in USA and a few other countries, it includes patients who may spend up to 23 hours in hospital. In this study, the 23 hours criterion is followed.

Day-care surgery is not a new concept; in fact the earliest report is in 1909 by a Glasgow surgeon James Nichol <sup>(2)</sup>, but the concept did not become popular till 1960 when first hospital based ambulatory unit was developed <sup>(3)</sup>. In the day-care, the patients and the procedures are selected in such a way so as to cause minimal harm or disturbance to the patient and his life. One has to be very careful and judicious in selecting the appropriate procedure and patients as otherwise it can lead to major complications.

All the preparations and facilities required in a major surgery should be met with in a day-care procedure.

Inguinal hernias occur in about (15%) of adult men and hernioplasty is the most common surgical procedure performed by general surgeons <sup>(4)</sup>. The repair of inguinal hernia provides a major surgical work load which is the reason for us to choose inguinal hernias repair for this study. Day-Care surgery is an innovative approach to surgical health care and, as in all innovative situations; there may be initial resistance to change <sup>(5)</sup>.

Due to false belief of the patients that being under supervision (routine-care surgery) in hospital is better, it is difficult to convince the patients in Government setups to go for day-care surgery.

Such factors lead to underuse of day-care surgery in government institutions. Also the lack of specialist day surgery unit, lack of support, absence of General

Practitioners (GP) nearby, absence of caretaker of the patient at the home, and distance from the hospitals, etc. affect the day-care surgery progression.

However, day-care surgery in public health care setup is the need of the hour. In a government/ public hospital with tremendous workload in surgical departments, day procedures help in making indoors beds free for the admissions of other patients who need to be hospitalized. In the long run it is cost effective to both the hospitals and the patients.

In addition, 'a day procedure', makes it look like a 'minor' surgery to the patient; therefore reduces the anxiety of the surgery. Being a day procedure, it reduces hospital stay and hence reduces the chance of hospital acquired infections.

In this study, we show that day-care surgery is possible and successful even with above mentioned shortcomings. This study makes an effort to prove that the day-surgery for inguinal hernia can be done in public health care setup safely and successfully without any specialist day-surgery units.

## **Patients and Methods:**

### **1. Data Collection**

In the present study, 100 cases of day-care and 100 cases of routine-care surgeries were studied at the Kirkuk General and Azadi Teaching Hospitals. They are tertiary referral centers catering to referrals from most sectors of the city.

All patients admitted to Kirkuk General and Azadi Teaching Hospitals that underwent an operation for treatment of unilateral inguinal hernia during the period from May 2007 to March 2015 were eligible.

In this study the day-care surgery was defined as the surgery in which the patient was discharged within 23 hours of admission; while routine-care surgery was defined as any surgery where the patient needs to remain overnight or longer after the surgery is completed, for care or observation.

A perform was made to record the details of the patient and the surgery, thus closely following the patient in the pre, intra and post-operative periods. Various complications, the number of patients requiring unplanned admissions or re-admission, patient satisfaction were emphasized upon. Patients were asked what they would prefer if they develop hernia on the contra lateral side and what they would recommend to friends and relatives. Patient satisfaction was measured in terms of percentage of patients recommending day care surgery for both situations.

For day-care surgeries, the patient selection criteria included presence of a responsible escort and access to a telephone. Patients were counseled during the outdoor department and explained the procedure of day-care surgery. They were given a contact number to contact in case of any doubt. Also their contact number was noted and instructions were given to them on the phone in case of need.

They were operated under local, spinal or general anaesthesia as decided by an anaesthesiologist, keeping in mind that the patient will be preferably discharged on the evening of surgery.

For day-care surgeries, the patient discharge criteria included vital signs for at least one hour, patient orientation to time, place and person, able to tolerate fluids, to void and to walk, and minimal nausea, vomiting and pain. Prolonged stay was defined as duration

of hospital stay exceeding 23 hours. Patients were given instructions to call if there was any discomfort and return to the hospital in case of any distress. Patients were followed up for seven days after surgery. Patient requiring to be admitted before this duration were defined as readmission. All other patients were termed to have successful surgery.

## **2. Analysis of Data**

Data was analyzed to study the variables such as age, type of surgery, day-care vs routine-care, duration of stay, type of anesthesia, post-operative complications-immediately and at the end of seventh post-operative day (POD-7), and patient's satisfaction. The above variables were compared in two groups: day-care surgery (group A) and routine-care surgery (group B). Comparisons also have been drawn against previous studies on day-care surgeries. Chi-square ( $\chi^2$ ) and student-t tests were used to compare variables and tests were considered significant when P-Value was  $< 0.05$ .

## **Results:**

A total number of 200 patients (100 day-care and 100 routine-care) were operated for unilateral inguinal hernia in the age group 1 year to 70 years in day-care surgery group and 1 to 78 in routine-care surgery group. The mean age the day-care group was ( $23.39 \pm 3.64$ ) with median age of 11 years, while in routine-care group was ( $27.55 \pm 3.62$ ) with median of 20 years. The mean ages were not significantly different in both groups ( $t$  stat = 0.811,  $p = 0.41$ ) which shows that the mean age was comparable in the two groups. Hernioplasty procedure compared to herniotomy was done on lower

percentage of patients in the day-care group, figures (1A&1B).

Herniotomy is more commonly done in children where mesh is not required and the procedure is short and simpler. However, the percentage of patients undergoing herniotomy/ hernioplasty were not significantly different in both groups ( $\chi^2$  test = 1.659,  $p = 0.198$ ), table (1). Hence in this study both groups were comparable in procedure wise also. Out of 100 day-care surgeries 58(58%) were carried out under General anaesthesia, 24(24%) under Spinal anaesthesia, and 18(18%) were carried out under Local anaesthesia. While, out of 100 routine-care surgeries, 42(42%) were under General Anaesthesia, 58(58%) under Spinal Anaesthesia, and no patient was given Local Anaesthesia. The percentages of the type of anaesthesia under the two groups were significantly different ( $\chi^2$  test = 20.257,  $p < 0.001$ ), table (1).

Day-care surgeries done under Local Anesthesia were associated with the least mean duration of stay (9 hours), whereas those done under Spinal Anaesthesia were associated with the highest mean duration of stay (12 hours). The mean duration of stay was not significantly different in the three types of anaesthesia ( $t$  test = 0.84,  $p = 0.32$ ). Routine-care surgeries done under General Anaesthesia were associated with the shorter mean duration of stay (2 days) compared to the surgeries done under Spinal Anaesthesia (4 days) which was significantly different in both types of anaesthesia ( $t$  test = 2.84,  $p = 0.0086$ ), table (1).

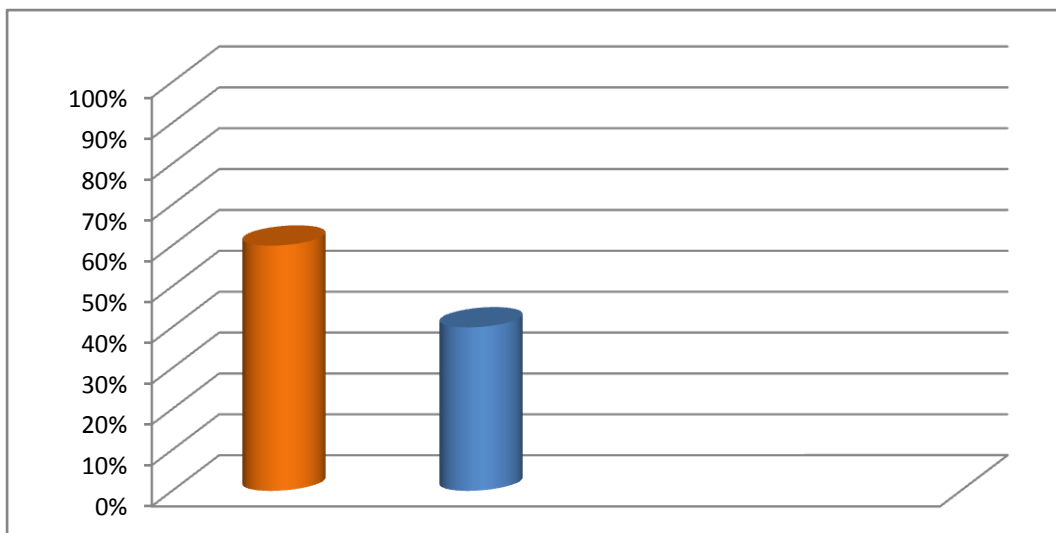
In the day-care surgeries group, 4 patients had minor immediate post-

operative complications out of which, 3 suffered from anaesthesia-related complications (urinary retention, vomiting & nausea) and one suffered from surgery-related complication (pain). Whereas, in the routine-care surgeries, 5 patients had immediate post-operative complications out of which 3 had urinary retention, 1 had pain and 1 had vomiting and nausea. Number of immediate complications in the two groups did not differ significantly ( $\chi^2$  test = 0.122,  $p = 0.72$ ), table (1).

As shown in Figure 2, four out of 100 (4%) day-care surgery patients had to be kept for more than 23 hours (prolonged stay). Only 2 out of 100 patients (2%) were readmitted. The readmission rate of (2%) is at par with (2-3%) recommended by Royal College of Surgeons.

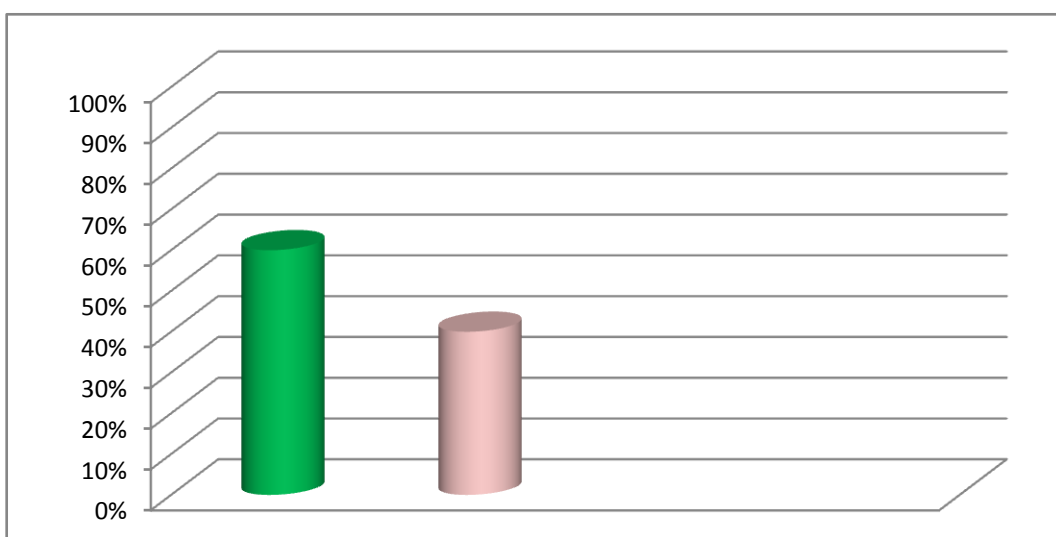
Two out of 100(2%) patients under the day-care surgeries developed post-operative day-7 complications (seroma), whereas 4 out of 100(4%) under the routine-care surgery had post-operative day-7 complications (2 had wound infection, and 2 had seroma).

Patient satisfaction was (94%) in patients with day-care surgery and (84%) with routine-care surgery, table (1). In the present study, amongst the 6 patients who were dissatisfied with day-care surgery, two of them had undergone Inguinal Hernioplasty under local anaesthesia; although both of them had uneventful immediate post-operative recovery, they had pain at home in the first 24 hours after discharge. For this reason they had to call for help to the contact assigned. However, they had no complaint on the follow-up post-operative day-7.



*HERNIOTOMY 60%*  
*HERNIOPLASTY 40%*

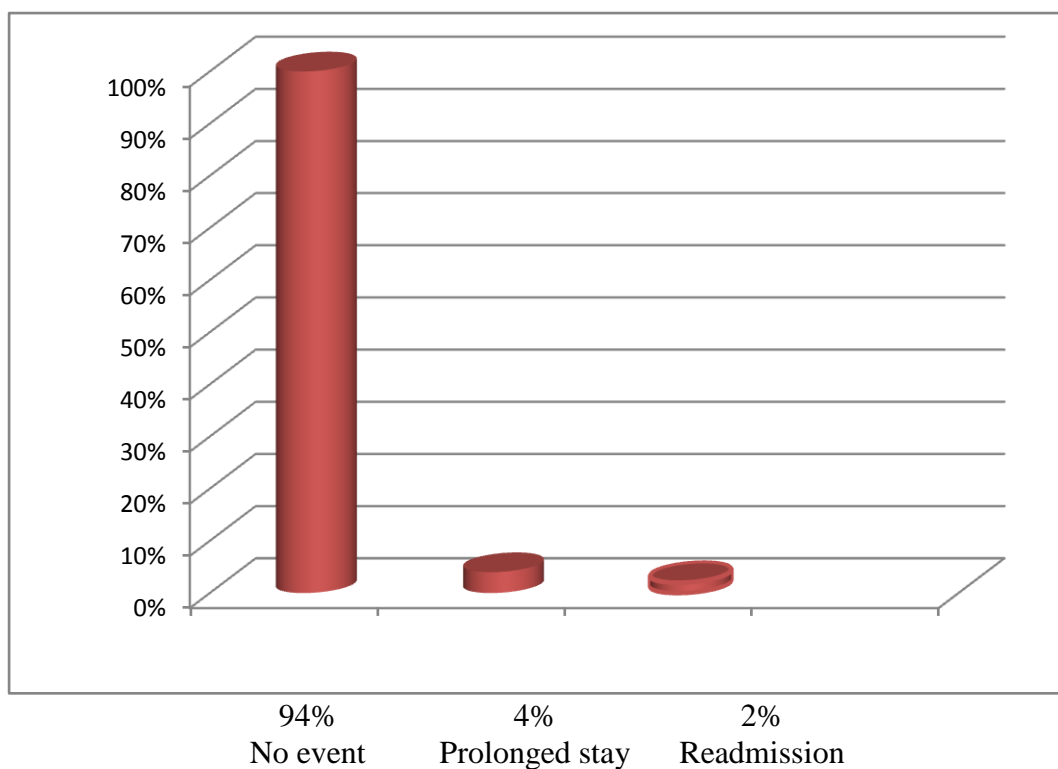
**Figure (1-A):** Day Care Cases.



HERNIOPLASTY 60%  
 HERNIOTOMY 40%

**Figure (1-B):** Routine Care Cases.

**Figure 1 (A&B):** Comparison of surgical procedures in both Day-care and Routine-care cases.



**Figure (2):** Prolonged readmission rates for day- care surgeries.

**Table (1):** Comparison between Day-care & Routine-care surgeries:

		Day-care (n=100)		Routine-care (n=100)		P-value( $\chi^2$ )
		No.	Percentage	No.	Percentage	
Anaesthesia	General	58	58%	42	42%	<0.001**
	Spinal	24	25%	58	58%	
	Local	18	18%	0	0%	
Surgical procedure	Hernioplasty	40	40%	58	58%	0.198
	Erniotomy	60	60%	42	42%	
Mean duration of stay	General	10hours		2days	P=0.0086 (t test)	
	Spinal	12hours		4 days		
	Local	9hours				
Immediate post-operative Complications		8	8%	10	10%	0.72
Post-operative day seven complications		2	2%	4	4%	0.56
Patient satisfaction		94	94%	84	84%	0.11

**Table (2):** Comparison with other studies:

Patients (%) in present study			Patients (%) in other studies	
Day-care		Routine-care	Kingsorth et al 5 Paanjen et al 6 Dhumale et al's 7 Putnis et al 8	
POD-7 Complications	2%	4%	2.95%	
Patient's Satisfaction	94%	84%	93.55	90%
Successful Surgery	94%		93.90%	



## **Discussion:**

Inguinal hernia surgery forms a substantial proportion of the general surgical workload. Inguinal hernia repair is ideally suited to day surgery and increasing numbers of procedures are being performed in this setting <sup>(6)</sup>. This reduces the inconvenience and risk to the patient associated with in-patient (routine-care) hospital stay and also substantially reduces the cost associated with the surgery <sup>(7)</sup>.

In the present study, the upper age was limited to 70 years in day-care surgeries so as to avoid major complications in the older patients. However, in the study by N. Mishra et al, patients' age ranged between 1 month and 90 years, and in the study by E. O. Oje et al, age ranged between 1 week and 100 years <sup>(8)</sup>. Similar to our results, in both of these studies, there were no major post-operative complications. Hence, day-care surgery may be suitable for all age groups ranging from 1 week to 100 years.

The Surgeries done under General and Spinal anesthesia are associated with longer stay as compared to those done under Local anesthesia. Hence normally in day-care surgeries, Local anesthesia is the preferred mode of anesthesia. It also avoids the complications of General anesthesia such as post-operative nausea and vomiting (PONV), drowsiness, and the complications of Spinal anesthesia like urinary retention. However patients of pediatric age group are operated under General anesthesia. In our study also, majority of day-care surgery patients were operated under General/Spinal anesthesia and only 18 out of 100 patients were operated under Local anesthesia.

In the present study, 2 patients out of 100 developed recurrent urinary

retention and had to be readmitted. Other than urinary retention, there was no anesthesia related complication causing readmission. In the study by T. Naresh Row et al, one patient out of 75 required readmission due to excessive drowsiness and four patients had urinary retention for which urinary catheterization was necessary <sup>(9)</sup>. They were discharged home with catheter. In our study, none of the patients were discharged with catheter or drain.

In this study, only (2%) of the patients in the day-care surgeries had complications on post-operative day-7 compared to (4%) in the routine-care surgery and (2.9%) in the study done by Kingsorth et al. <sup>(10)</sup>. However, their follow-up time was very long more than 2 years, table (2). (94%) of the patients in our study had a satisfactory experience with day-care surgery, whereas only (84%) patients had a satisfactory experience with routine-care surgery. Paanjen et al. reported the similar rate of patient satisfaction (93.55%), whereas Dhumale et al reported only (90%) patients satisfaction rate, table (2) <sup>(11, 12)</sup>. Surgery was successful in (94%) of patients in the present study, same as success rate reported by Putnis et al., table (2) <sup>(13)</sup>.

Much has been said about the requirement of specialized day-care surgery unit for continuing this strategy. The patients' age ranged between 1 month and 90 years, and in special setup which includes a surgical consultant, dedicated staff and operation theatres for day-care surgery sure streamlines the procedure and allows for greater satisfaction for the patients. But, often the lack of these units in public health care setup has been used as reason for

denying patients the benefits of day-care surgery.

However, we showed in our study that day-care surgeries done in general surgical unit without any specialized unit did achieve high patient satisfaction and low complication rate compared to routine-care surgeries, suggesting that day-care surgeries can be performed successfully in public health care setup without day-care unit or surrounding specialized support infrastructure.

### **Conclusions:**

Even with the shortcomings of the public health care setup of developing nation, day-care surgery for unilateral hernia repair in patients can be managed without significant complications as compared to routine-care surgery. Results are comparable to standardized day-care units also. Looking at the advantages of reduction of hospital stay and greater satisfaction, day-care hernia should be promoted. Day-care surgery could be expanded in government setups for inguinal hernia and many other surgeries.

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