

## Laparoscopic Cholecystectomy 2022-Cost Control-Need of the Time!

**Suresh Kishanrao\***

*Public Health Consultant, Bengaluru, India*

**\*Corresponding Author:** Suresh Kishanrao, Public Health Consultant, Bengaluru, India.

**Received:** January 03, 2023; **Published:** January 05, 2023

### Introduction

The estimated overall global of cholelithiasis is 10 - 15% in the general population, with some differences across countries and most patients are asymptomatic. The incidence of gall stones is around 6% of the total population in India, with a clear predominance among females 10% of women and 3% in men. Among American adults the prevalence of cholelithiasis is about 10%, while in Western Europe the prevalence ranges from 5.9% to 21.9%. More than one million Americans are diagnosed with gallstones every year, joining about 38 million who already have the disorder. Fortunately, most people with gallstones do not have symptoms and do not require treatment [1]. The incidence rates quoted reminds me of what our professor of surgery in early 1962 theory class, had described at risk population as five 'F's standing for 'fair, fat, female, fertile and forty' are likely to have cholelithiasis. In elderly people, it may go up to 20 per cent [2]. Cholecystectomy - the surgical resection and removal was and continues to be the permanent solution for the condition. There are 2 approaches today: i) Open cholecystectomy and 2) Laparoscopic cholecystectomy [3]. In October 2022, a niece of mine underwent an elective laparoscopic cholecystectomy, spending 250,000 Indian Rupees, that triggered this review. This individual is covered by Health Insurance and 80% of the money spent will be reimbursed.

### The issue

The issue of this editorial is to review: i) The options available for cholecystectomy, a long-term solution, ii) Exorbitant cost of any of the options chosen in general and during emergency operation, iii) Should it really cost that much? iv) What cost does in Ayushman Bharat package reimburse, v) Should governments do something given the magnitude of the problem in the country?

### The story

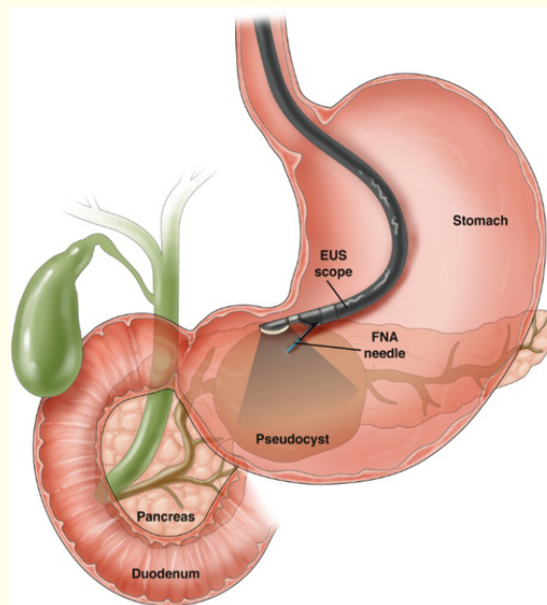
- i) A young lady of 35 years, with recurrent abdominal pain since adolescence, was referred by a general practitioner and goes for an ultrasonography (USG) in Bengaluru on 31 October 2022. The MRI report read: 1. Grade 1 hepatic fatty infiltration, 2. Cholecystolithiasis and dilated common bile duct (CBD), central intrahepatic biliary radical dilatation due to distal CBD calculi.
- ii) On 03/11/22 Endoscopic retrograde cholangiopancreatography (ERCP), a procedure to diagnose and treat problems in the liver, gallbladder, bile ducts, and pancreas was done, after basic investigations like FBS (120), PPBS (160), HBA1c (6.9), TC and DC (normal range) Serum Cholesterol (205), Triglycerides prothrombin time (14.5 Sec), HBASG, HCAVG (both Negative), It combined X-ray and the use of an endoscope a long, flexible, lighted tube to treatment of pancreatic ducts by placing stents. The findings included bulky Papilla; selective CBD cannulation was done after pre-cut papillotomy. Cholangiogram showed a dilated CBD measuring 12 mm with lucent filling defect measuring 10 mm in the lower GBD. GB was not opacified, IHBR was mildly dilated. Cholelithiasis

involves the presence of gallstones-concretions that form in the biliary tract, usually in the gallbladder. Choledocholithiasis refers to the presence of one or more gallstones in the common bile duct (CBD).

Over the wire sphincterotomy and balloon retrieval of yellow pigmented calculus done. Placed 7 cm ErDPT, PVC stent and good bile flow noted. Patient had some discomfort when swallowing for 2 - 3 days after an ERCP. A bit of bloating was also experienced mainly due to the air that we put into your stomach during the procedure. Since there were multiple GB stones of various sizes, no attempt was made to remove. Usually stones up to 12 mm can be easily removed by ERCP. As stones, larger than 12 mm require additional procedure like mechanical lithotripsy or Post Sphincterotomy Balloon Sphincteroplasty (PSBS) a surgeon's intervention was advised. The whole procedure costing about INR 130,000 and advised cholecystectomy by a gastroenterologist.

- iii) An USG of abdomen on 07/10/22 showed: 1 Hepatic fatty infiltration, 2. Cholelithiasis with CBD stent *in situ*, 3. Low place IUCD and Left lateral wall subcostal uterine fibroid costing INR 1000.
- iv) A week later she underwent laparoscopic cholecystectomy, costing another 120,000 INR.

The cholecystectomy procedure was done under general anaesthesia. Surgeon made 3 small incisions on the patient's abdomen. First inflated the abdomen for easy viewing and inserted the laparoscope through one of the incisions. The laparoscope is a lighted instrument with a video camera attached so provide a magnified view of the patient's internal organs. Surgeon searched the common bile duct and detected multiple gallstones lodged there. Using a special scope, the surgeon then removed those gallstones, followed by cholecystectomy. The entire procedure took about 1 hour. He was kept hospitalized for 24 hrs, fluids were given in the evening orally, and semi-solid food introduced next morning. She was discharged next evening with an advice of normal activities to be resumed after 10 days of the surgery and no special diet was advised.



**Figure 1**

- v) After 2/3 months she is advised to go back to gastroenterologist to get the stent removed. A repeat ERCP at the time of biliary stent removal is commonly performed to confirm closure of the leak and to exclude other pathology. Plastic biliary stents are commonly placed during endoscopic retrograde cholangiopancreatography (ERCP) and should be removed or replaced within 3 months to reduce the risk of stent obstruction. A basket catheter, snare, balloon catheter, grasping forceps, stent retriever, and other tools are used, and the procedure done under sedation. This would cost another INR 50,000.
- vi) Post-cholecystectomy dilatation of the bile duct occurs slightly in most cases and some cases may show more than 3 mm dilatation over baseline. Asymptomatic bile duct dilatation of up to 10 mm can be considered as normal range in patients after cholecystectomy.

## Discussions

### Magnitude of the cholelithiasis problem and evolving surgical procedures and the cost

Cholecystectomy is the commonest operation of the biliary tract and is the gold standard for the definitive management of symptomatic cholelithiasis. It is the commonest elective surgical procedures performed, to address symptoms related to biliary colic from cholelithiasis, to treat complications of gallstones like acute cholecystitis, biliary pancreatitis, or as incidental cholecystectomies during other open abdominal procedures in India. Carl Langenbuch a German surgeon is credited with having pioneered the concept and execution of the first gall bladder extirpation [4]. The description of attacks of biliary colic through the medical literature with numerous physicians and surgeons including Francis Glisson in 1658, reporting similar cases.

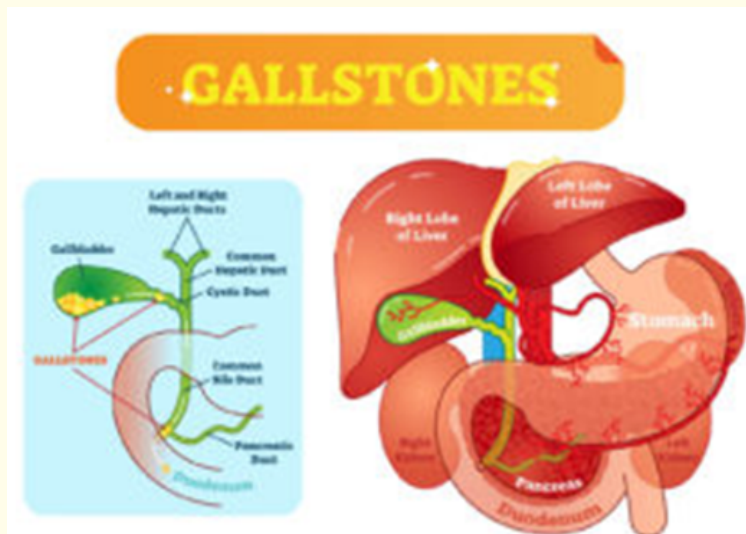


Figure 2

The widespread use of diagnostic abdominal ultrasonography has led to the increased detection of clinically unsuspected gallstones, resulting in controversy regarding the optimal management of asymptomatic (silent) gallstones. Biliary colic with sonographically identi-

fiable stones is the most common indication for elective cholecystectomy. Cholecystectomy is not indicated in most patients with asymptomatic stones because only 2 - 3% of these patients go on to become symptomatic per year. Patients who are immunocompromised, are awaiting organ allotransplantation, or have sickle cell disease are at higher risk of developing complications are operated irrespective of the presence or absence of symptoms. Additional indications recommended include: a) Calculi > 3 cm in diameter, in geographical regions with a high prevalence of gallbladder cancer, b) Chronically obliterated cystic duct, c) Non-functioning gallbladder, d) Calcified gallbladder, e) Gallbladder polyp >10 mm or showing a rapid increase in size, f) Gallbladder trauma, g) Anomalous junction of the pancreatic and biliary ducts, h) Morbid obesity is associated with a high prevalence of cholelithiasis, as the risk of developing cholelithiasis is increased during rapid weight loss [5].

### Open cholecystectomy

The first open cholecystectomy I saw in 1963, during my first surgical clinical posting. This was an emergency cholecystectomy, as the patient was admitted with acute abdominal pain, signs of extensive inflammation diagnosed following an X-ray abdomen revealing retained bile duct stones. I had seen the surgeon making a 6-inch incision on patients' abdomen below your ribs on the right side. The muscle and tissue were pulled back to reveal liver and gallbladder. He had applied two surgical clips (made of sterile titanium) each to the proximal artery and distal duct and one clip to the portion of each structure which will be removed with the gallbladder. He then freed up and secured cystic duct and artery, separated the gallbladder from liver, and removed it. The incision was closed in two running layers using a no 1 PDS suture. The first layer included the peritoneum, transversus abdominis, and internal oblique laterally, and posterior rectus sheath medially and the second layer included the external oblique laterally and anterior rectus sheath medially. The surgery had lasted for nearly 2 hours post-surgery recovery had taken about 4 hours.

	OPEN SURGERY	LAPAROSCOPIC SURGERY
Scars & Stiches	Big	Minimal
Cuts	8-10cm	<1cm
Painless Procedure	No	Minimal
Infection Chances	High	Very Low
Hospital Duration	Long	Short
Recovery Period	3-4 Weeks	3-4 Days

Figure 3

**Laparoscopic cholecystectomy:** (LC) since its inception in 1989 has become the gold standard treatment for gall stone disease. The technique of performing LC has undergone many changes and variations. Several surgeons have tried to reduce the size and number of ports to improve cosmetic and postoperative outcomes and developed their own different versions.

## Laparoscopic Cholecystectomy 2022-Cost Control-Need of the Time!

---

**The standard technique of performing LC is to use 4 ports:** The pneumoperitoneum is achieved by either closed Veress needle technique or open technique using a blunt trocar or a Hasson's trocar. A 10 mm telescope usually a 30 degree is used at the umbilicus either infra, intra or supraumbilical depending on patient's habitus and surgeon's preference. Another 10 mm trocar is used in the epigastrium which is the main right working port for the surgeon. One 5 mm trocar in the right lumbar region is used for gallbladder fundus traction and another 5 mm trocar in the right hypochondrium is used as left-hand working port for the surgeon. With left hand Hartmann's pouch is retracted and with right hand anterior and posterior dissection is done in Calot's triangle and wide window is created. Clipping of the cystic duct and cystic artery is achieved from 10 mm epigastric port. Gallbladder extraction is generally done from either epigastric or umbilical port.

In the last decade several surgeons have been using more and more modified techniques to make the operation more minimally invasive and to inflict lesser postoperative pain and better cosmesis. The modifications may be either reduced port size, i.e. from 10 mm to 5 mm or from 5 mm to 3 or 2 mm or reduced port numbers. The most recent development in technique of LC is single incision laparoscopic surgery (SILS) or single site laparoscopic cholecystectomy (SSLC). There are various techniques like trans-gastric, transvaginal, and trans-colonic approaches also.

### What cholecystectomy costs in India

On average, The cost of gallstone removal surgery in India is in between Rs. 45,000 to Rs. 1,00,000 approximately for open surgery and laparoscopic cholecystectomy surgery (LCS) Rs. 80,000 to Rs. 1,60,000 in various towns. It is to be kept in mind however, that the final cost will depend on a variety of factors such as type of surgery, surgical care required, etc with an average cost of 95,000 for LCS [8].

Any formal inquiry over phone you will get a quote of INR 60,000 for open cholecystectomy and INR 75,000 for laparoscopic cholecystectomy in most of the cities like Mumbai, Bengaluru, Delhi, Kolkata, New Delhi etc. Please note this actual cost of the surgery and does not include anaesthetists' charges, hospital stay, drugs etc.

Here is a list of gallbladder stone surgery costs in various cities of India (Top 6 and bottom 4 only).

Sl. No	City	Average Price (INR)	Price Range (Min-Max) (INR)
1	New Delhi	Rs. 125045	Rs. 34788 - 218000
2	Mumbai	Rs. 115752	Rs. 27537 - 317000
3	Chennai	Rs. 112649	Rs. 34419 - 225540
4	Hyderabad	Rs. 111788	Rs. 34788 - 276831
5	Bangalore	Rs. 104182	Rs. 20000 - 288335
6	Thiruvananthapuram	Rs. 94116	Rs. 39021 - 184053
7	Bhopal	Rs. 69963	Rs. 38000 - 114310
8	Ranchi	Rs. 59544	Rs. 26000 - 113820
9	Patna	Rs. 53563	Rs. 38000 - 102998
10	Visakhapatnam	Rs. 45426	Rs. 39021 - 56700

The GOI provide for INR 10,000, for laparoscopic cholecystostomy and 22,800 for cholecystectomy open or laparoscopic in Ayushman Bharat Package [9] as detailed below:

## Laparoscopic Cholecystectomy 2022-Cost Control-Need of the Time!

---

- 913 SG (General cholecystectomy-with exploration of CBD-open) SG039B S 22,800 0 N N clinical notes intra procedure 6surgery) and USG clinical photograph, confirming the detailed discharge diagnosis summary, detailed operative notes.
- 914 SG (General cholecystectomy-without exploration SG039C S 22,800 0 N N clinical notes intra procedure 6surgery) of CBD - Lap. and USG clinical photograph, confirming the detailed discharge diagnosis summary, detailed operative notes.
- 915 SG (General cholecystectomy-with exploration of CBD - Lap. SG039D S 22,800 5 N N clinical notes intra procedure 6surgery) and USG clinical photograph, confirming the detailed discharge diagnosis summary, detailed operative notes.
- 916 SG (General operative cholecystostomy-open SG040A S 10,000 5 N N clinical notes intra procedure 4surgery) and USG/CT clinical photograph, scan detailed discharge confirming the summary, detailed diagnosis for operative notes which the surgery is done.
- 917 SG (General operative cholecystostomy-Lap. SG040B S 10,000 3 N N clinical notes intra procedure 4surgery) and USG/CT clinical photograph, scan detailed discharge confirming the summary, detailed diagnosis for operative notes which the surgery is done.

There are interstate variations in these rates also. For example, Government of Karnataka Provides for 22500 and 9,000 for cholecystostomy and cholecystectomy respectively [10].

### A timely new angle to look at cholecystectomy in developing countries including India:

- If 10% of the adult population suffers from cholelithiasis in India and a conservative 2% of them needing cholecystectomy. According to the World Population Prospects 2022 (WPP), India's population will reach 1.428 billion on July 1, 2023. Desegregated demographic estimated figures indicate that 15-64 years population forms 63.6% (male 385 million/female 360 million) and 65 and over population constitute 5.3% (male 30 million/female 33 million). With 808 million adult population 81 million will suffer cholelithiasis and among them 1.6 million would need surgery.
- The expert committee that decided the Ayushman Bharat package, fixed the cost of laparoscopic/open cholecystectomy charges at INR 22,000, in December 2022.
- The private sector cost as analysed are at least five-ten folds higher.
- Since there is no regulating body in India to control the varying charges, patients are taken for a free ride.
- A recent survey across India among around 1,800 people in the age group of 18-35. showed the incidence of health insurance of 35% in general population and was higher among the older age group and urbanites. While most respondents either had personal health insurance or the one provided by their employers, few had both. While north India shows higher number of people taking personal health insurance, most people in south India depend more on employer-provided policies.
- With Ayushman Bharat getting inroads to rural India about 70 per cent of the respondents have a sum assured less than Rs 5 lakh.
- The author strongly feels that cholecystectomy surgery facilities be made available in all district hospitals over next 5 years so that majority people get benefitted.
- Ayushman Bharat need to negotiate with recognized private facilities for this surgery with an upper limit of INR 100,000.

### Bibliography

1. Xuejin Gao., *et al.* "Prevalence, Risk Factors, and Complications of Cholelithiasis". *Frontiers in Nutrition* (2021): 762240.
2. Hina Zahid. "Cholecystectomy: Govt. Of India Standard Treatment Guidelines" (2021).
3. Sanjiv Haribhakti., *et al.* "Techniques of laparoscopic cholecystectomy: Nomenclature and selection". *Journal of Minimal Access Surgery* 11.2 (2015): 113-118.
4. Shehadi WH. "The biliary system through the ages". *International Journal of Surgery* (1979): 63.
5. Gallbladder Stone Surgery Cost in India.
6. Frederik Keus., *et al.* "Laparoscopic versus open cholecystectomy for patients with symptomatic cholecystolithiasis" (2006).
7. Ranjan R., *et al.* "A comparative study of laparoscopic (LC) vs. open cholecystectomy (OC) in a medical school of Bihar, India". *International Journal of Advances in Medicine* 5.6 (2018): 1412-1416,
8. Gallbladder Stone Surgery Cost in India.
9. Latest-disease-covered-packages-ayushman-bharat.
10. BENEFIT 20PACKAGE 20(GOVERNMENT).

**Volume 9 Issue 12 December 2022**

**©All rights reserved by Suresh Kishanrao.**