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NEWER TECHNIQUE OF GALL BLADDER REMOVAL: ARE THEY WORTH?

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ABSTRACT: This study includes the works of various surgeons who adopted newer methods of gall bladder removal vis a vis standard method of laparoscopic cholecystectomy through 4-ports. Newer methods include Single- incision laparoscopic cholecystectomy (SILC) and Natural Orifice Transluminal Endoscopic Surgery (NOTES). The work of various studies of Laparoscopic Cholecystectomy (LC), a gold standard so far analysed against the newer techniques with respect to complications directly related to the procedure such as biliary injury, bile leak, infection, trochar related injury and post-operative incisional hernia; Post-operative hospital stay and return to work and expenses incurred over the surgical procedure .Laparoscopic cholecystectomy 4-port standard procedure, still rules the roost. Newer methods like SILC and NOTES though around for more than 8 yrs but yet to click with surgeons and more importantly with patients. Patients still find the 4-port LC fine and satisfied with it. Laparoscopic cholecystectomy (4-port LC) continues to be the method of choice with surgeons throughout globe except in few pockets. It has been standardized for procedure details and rate of complications and conversions .Till now apart from some extra advantage of cosmetic superiority newer methods do not provide any extra advantage as far as complications, hospital stay, return to normal activity and treatment cost are concerned.

KEYWORDS: cholecystectomy, laparoscopy, NOTES, SILC, complications and cosmesis.

INTRODUCTION: Since the removal of first gall bladder more than 100 yrs back by Carel Johann Langhenbuch in 1882, removal of gall bladder remains the procedure of choice for gall bladder diseases mostly for calculus disease.⁽¹⁾ About 27 yrs back a new turn came in the form of laparoscopic cholecystectomy by dr. Philip Mouret in 1987. Though the purpose was same i.e. removal of gall bladder but method was different, later popularized as minimal access approach. It became instant hit with general surgeons and patients alike. Even the most reluctant surgeons mastered the procedure to keep pace with changing trends. The technique replaced open method within 2-4 yrs of its introduction.⁽²⁾ Now about 8yrs back two newer methods of gall bladder removal are introduced to challenge the now gold standard 4-port LC adopted across the globe.^(3,4,5) Many studies(about50) are found on these newer methods.^(6,7,8) Most studies done over small number of patients.⁽²⁾ Very few studies included more than 50 patients though a couple of them included a figure around 500.^(9,10) The ultimate emphasis by these studies is given on cosmetic outcomes.^(6,11) Still these techniques could not click with surgeons and patients as was expected and very few surgeons are offering newer technique to their patients.^(2,12) Other parameters of comparison like complication rate, hospital stay, return to normal activity showed no difference.^(3,12,13) In fact a possibility of contamination^(10,14) was always there especially in cases with transgastric approach and port incisional hernia⁽¹⁵⁾ in patients subjected to single incision LC.

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METHODS: The records of various studies related to 4-port laparoscopic cholecystectomy and those of newer methods are reviewed and analysed along various parameters i.e. age, sex, weight, comorbidity, hospital stay, return to normal activity and expenses involved in the procedure. Classical LC involved 4-port approach.⁽²⁾ In newer methods Single incision laparoscopic cholecystectomy (SILC) where a 2cm long incision given in the umbilical pit.⁽¹⁶⁾ Three 5mm ports are then made through this incision by veress technique. An extracorporeal suture used to retract the gall bladder cephalad.^(16,17) Once finished with dissection one of the 5 mm port is converted to 10mm and gall bladder removed through it in a retrieval bag. In NOTES natural orifices like vagina and stomach are used to enter peritoneal cavity.

RESULTS: Advocates of LC with larger studies stress upon sticking to LC⁽²⁾ as they did not find any extra advantage of newer methods except little better cosmetic appearance. They can be true in their own right because newer methods are no better when parameters like complications etc. are taken into consideration. Though smaller studies are there,^(13,16,17) port hernia in single-incision LC is a significant reality. Moreover, patients are fine with the classical 4-port LC in contrast when OC was being replaced by LC 27 yrs back⁽²⁾ when the latter lapped by patients. But the patients are not showing much enthusiasm about the newer methods.⁽¹⁸⁾ In our own institution where 13 surgeons are doing LC almost every day, no patient demanded facility of newer techniques so far. In contrast when OC was being replaced by LC everybody asked for it. Similarly, surgeons are not much interested in learning the new technique obviously because of lack of demand, costly equipment and little difficulty in mastering the art. Special preoperative preparations are needed for NOTES.^(9,10,14) Apparently 4-port LC remains the gold standard despite all new challenges and continues to be so till very refined methods of microminimally invasive surgery are invented.^(11,12,19)

DISCUSSION: Laparoscopic cholecystectomy (4-port LC) studies are pretty large.^(11,12,19,20) and reproduced time and again throughout the world leading to standardization of technique, conversion rate,^(14,15,16) complication rate in general and fractional i.e. intra-operative or post-operative. Despite all odds procedure is extremely popular with surgeons and patients alike. Advocates of newer procedures are extremely positive about newer methods but they mainly talk about the cosmetic benefits.^(6,8,21) There is definitely increased risk of contamination when gastric^(8,14) approach is used. increased risk of incisional hernia⁽²²⁾ following single-incision LC is a reality rather than a possibility. Moreover, these methods are difficult to master, need special equipment along with specially trained paramedical staff.^(5,7) Enhanced expenses of treatment is another factor. Surgeons who recently mastered classical LC technique will not easily resort to newer ones mere for the sake of cosmetic benefit which is not as appealing. In NOTES vaginal route is the preferred and safer route but applicable on only 50% of population (female gender).⁽²⁾ So in males transgastric route is inevitable and hence increased risk of contamination and post-operative leak of gastric contents. Transrectal route also carries a good risk of contamination and hence rarely used and not much references are available pertaining to this approach. The final comparison comes between four port mark and partially hidden single mark and port mark v/s no mark (notes).⁽⁶⁾ Marks do not matter to patient as long as the procedure is performed laparoscopically and within his spending capacity .Till today no patient objected to number of marks as long as procedure was completed^(11,2) laparoscopically. Patients get disappointed only when the LC is converted to OC.^(2,4) A higher incidence of incisional hernia following single port procedure carries negative message down the patient population.

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CONCLUSION: By reviewing the literature available on 4-port LC and that on newer techniques like SILC and NOTES, pros and cons of these methods are observed. We still are of the opinion that 4-port LC is still the gold standard despite all challenges. Reason for lukewarm response to newer methods is their inability to show extra benefits over the classic method except little cosmetic result. Newer procedures are little difficult to learn, physically more taxing on the surgeon, expensive and need costly equipment and specially trained paramedics.

REFERENCES:

1. Saeed Hadi Al-Bahlouli, Ahmed Al-Malahi, Nagi Homesh Ghallab, Abdulelah Shuga'a Al-Dain, Ali A. Al Sabahi. Conversion rate of laparoscopic to open cholecystectomy. *Yemeni Journal for Medical Sciences* (2009) 1 (3).
2. Jeffrey B, Comitolo MD. Laparoscopic cholecystectomy and newer methods of gall bladder removal. *JLS* 2012 jul-sep 16 (3) 406-412.
3. P fluke JM, Parker M, Stauffer JA, et al. Laparoscopic surgery performed through a single incision. A systemic review of the current literature. *J Am Coll Surg*. 2010; 212; 113-118 (Pub med).
4. Lau KN, Sindram D, Agee N, Martinie JB, Ianitti DA. Bile duct injury after single incision laparoscopic cholecystectomy. *JLS*. 2010; 14: 587-591.(Pubmed)
5. Harnandz J, Ross S, Morton C, et al. The learning curve of laparoendoscopic single site cholecystectomy. Definable short and safe. *J Am Coll Surg*, 2010; 211; 652-657.(Pubmed)
6. Tachino R, Greco F, Matera D. Single incision laparoscopic cholecystectomy; Surgery without a visible scar. *Surg Endosc*. 2009; 23; 896-899.(Pubmed)
7. Meadows MC, Chamberlain RS, A review on the status of natural orifice transluminal endoscopic surgery (NOTES) cholecystectomy; Technique and challenges, open access surgery; 2010; 3: 73-86.
8. Narula VK, Happel LC, Volt K, et al. Transgastric endoscopic peritoneoscopy does not require decontamination of the stomach in humans. *Surg ENDOSC*. 2009; 23: 1331-1336.(Pubmed)
9. Lehmann KS, Ritz JP, Wibmer A, et al. The German Registry for natural orifice transluminal endoscopic surgery: report of the first 551 patients. *Ann Surg*. 2010; 252: 263-270.(Pubmed)
10. Lehmann KS, Ritz JP, Wibmer A, et al. The German Registry for natural orifice transluminal endoscopic surgery: Report of the first 24 months. Presented at ACS 96th Annual Clinical Congress, Bariatric and Foregut session, 2009.
11. Tania O, Jain M, Khanna S, Sen B. Iatrogenic biliary injury: 13305 cholecystectomies experienced by a single surgical team over more than 13 yrs. *Surg Endosc*. 2008; 22: 1077-1086.(Pubmed).
12. Sakpal SV, Bindra SS, Chamberlain RS. Laparoscopic cholecystectomy conversion rates two decades later. *JLS*. 2010; 14: 476-483.(PMC free article)(Pubmed).
13. Chow A, Purkayastha S, Aziz O, Pefanis D, Paraskeva P. Single incision laparoscopic surgery for cholecystectomy. *Arch Surg*. 2010; 145: 1187-1192.(Pubmed).
14. Lomanto D, Chua HC, Myat MM, So J, Shabbir A, Ho L. Microbiological contamination during transgastric and transvaginal endoscopic techniques. *J Laparoendo Adv Surg Techn*. 2009; 19: 603-606. (Pubmed).

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15. Bunting DM. Port-site hernia following laparoscopic cholecystectomy. *JLS*. 2010; 4: 490-497.(PMC free article) (Pubmed).
16. Antoniou SA, Pointner R, Granderath FA. Single- incision laparoscopic cholecystectomy : a systemic review. *Surg Endosc*. 2011 Feb; 25 (2): 367-77.
17. Roberts KE, Solomon D, Duffy AJ, Bell RL. Single –incision laparoscopic cholecystectomy: A surgeon’s initial experience with 56 consecutive cases and a review of the literature. *J Gastrointest Surg*. 2010 Mar; 14 (3): 506-10.
18. Roberts KE, Solomon D, Duffy AJ, Bell RL. Single –incision laparoscopic cholecystectomy: A surgeon’s initial experience with 56 consecutive cases and a review of the literature. *J Gastrointest Surg*. 2010 Mar; 14 (3): 506-10.
19. Hasson HM. Open laparoscopy as a method of access in laparoscopic surgery. *Gynaecol Endosc*. 1999; 8: 353-362.
20. Chiruvella A, S Sarmiento JM, Sweeny JF, Lin E, Davis SS. Iatrogenic combined bile duct and right hepatic artery injury during single incision laparoscopic cholecystectomy. *JLS*. 2010; 14: 268-271.(PMC free article) (Pubmed).
21. Han H, Choi S, Kim WW, Choi S. Single- incision multiport laparoscopic cholecystectomy. *Arch Surg*. 2011; 146: 68-74.(Pubmed).
22. Strasberg SM, Brunt M. Rationale and use of the critical view of safety in laparoscopic cholecystectomy. *J Am Coll Surg*.2010; 211: 176-186.(Pubmed).

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