Research Article

Use of Stone Forceps for Liver Retraction in Laparoscopic Bariatric Surgery

Hamdy A. Mohammed
Department of General Surgery, Faculty of Medicine, Azhar University

Abstract
Background: Laparoscopic bariatric surgery requires retraction of the left lobe of the liver for exposure of the hiatus and the stomach. The most common used methods are using the retractors that require another incisions and prolonged operative time. **Objectives**: A prospective assessment of the efficacy and safety of a percutaneous stone forceps without trocar for liver retraction in patients undergoing laparoscopic bariatric surgery. **Methods**: A prospective revie**w** was performed on 120 patients undergoing bariatric surgery from January2019 to January 2020 in Alhayat national hospital in Saudi Arabia gazan. A percutaneous stone forceps was used to retract the left lobe of the liver in all cases. The retractor can be changed as necessary by releasing and catching the diaphragm at different sites. **Results:** This technique was used in 120 patients from January2019 until january 2020. The average body mass index was 45 .In all patients, this method was found to be good and easy to complete the bariatric surgery. The majority of procedures included laparoscopic Roux-en-Y gastric bypass, sleeve gastrectomy. No intraoperative liver injuries occurred with use of this technique. **Conclusion**: this method of retraction of the liver using the stone forceps grasper found to be safe in the morbidly obese patients. The rate of complications is low. This method is safe and effective in retraction of liver with less trauma than conventional technique.
Keywords: bariatric surgery, liver retraction, percutaneous technique.

Introduction
Laparoscopic bariatric surgeries are challenging procedures to perform. A high body mass index (BMI) and an enlarged liver increase the difficulty of surgery.. However, an enlarged liver can impede optimal visualization of the stomach during surgery. The point for many surgeons is how to retract the left lobe of the liver for complete exposure. recently, the most commonly techniques (i.e., require an additional subxiphoid incision, need attachment to the operation table and increase the iatrogenic injury.[1]

Furthermore, more operative time is required to fix these retractors. Several methods of liver retraction need modified surgical drains suspension tape, silicone disks, clamps and ractors compinations and suture- based methods.[2,12]. No specified technique is the best. However, It is widely known that techniques increase the iatrogenic liver injury, increase the postoperative pain.[3,13] Therefore, the best metod for liver retraction during laparoscopic bariatric surgery displace the liver to allow for complete exposure of the hiatus in a non traumatic method and not consume long time. furthermore, if this can be done without incision or trocar, using only a retractor percutanously it will be better as regard cost and cosmetic view , (fig.,1)

Fig. (1): 10ML trocar followed by stone forceps without port

Methods

This is a large cases of bariatric operations by a multiple surgical groups. A total 120 patients underwent bariatric surgery using the stone forceps grasper as a percutaneous liver retractor. The patients' medical records were reviewed for demographic information, co-morbidities, and 30-day complication rate. The patients were prepped and draped in the usual fashion. A Vereus needle was inserted into Palmer's point and used to establish pneumoperitoneum. A5-mmoptical trocar was inserted into the left upper quadrant. After inspecting all 4 abdominal quadrants, additional trocars were used for bariatric surgery. also the stone forceps retractor was inserted down to the xiphoid process under full laparoscopic view. The left lobe of the liver was retracted anteriorly towars the abdominal wall by directing the instrument under the the liver and attaching it to the peritoneum which cover the apex of the crura of diaphragm . The stone foceps retractor can be introduced easily to facilitate full exposure of the hiatus. At the end of the case, the retractor was removed under complete laparoscopic visualization. (fig., 2).

Fig. (2): After rtetraction hiatus is completely seen

Results

A total of 120 bariatric surgery patients underwent liver retraction using this technique by multiple surgical group in alhayat national hospitals.

Table (1): summary of pt characteristics

Pt characteristics	value
Age **Mean** **range**	 38 22-56
Gender **Male** **female**	 33 87
BMIs **Mean** **range**	 438-462

procedure	N%
Lap gastric bypass	35 29.1%
Lap sleeve gastrectomy	85 70.8%

The estimated time for to place this liver retractor was 1 minute in all cases. There were 3cases where an additional stone forceps retractor was used to retract a huge liver. No conversion to a conventional liver retractor required for these cases. The postoperative follow up was uneventful in all cases. The sit of wound from the stone forcep retractor was not noticed 2 weeks after operation. There were no complications in the thirty days after operation.

Discussion

Exposure of the hiatus by retraction of the left lobe of the liver is Very important requirement in bariatric surgery. Old liver retractors require an another port site, also increase the risk of infection and take long operative time. Many approaches need more instruments and long operative time.[5,14] Many methods for liver retraction have been described. One procedure is known as the Istanbul technique, which is utilized during single incision laparoscopic surgery (SILS) and was first describedby Hamzaoglu et al.,[7,15] In this metod, a Penrose drain is prepared with 2 silk sutures tied well to both ends of the drain. and then inserted througha10-mm trocar of the SIL Sport and put below the lateral segment of the liver, where it serves as a "hammock" to suspend the liver. Another liver suspension technique was described by Woo et al.,[4,6] and requires the use of two 4 x4 gauze pads, 2–0 polypropylene monofilament suture, and a 70-mm doubl estraight taper needle. The gauze pads are folded and then threaded using the suture to create a make shift a traumatic support for the liver suspension. Where as there is method being a traumatic suspension of the liver, these techniques need long operative time that must be spent on manually fashioning the "hammock" and gauze sutures. this method of liver retraction that use a silicone disc is known as the ϕ-shaped technique, and firstly described by Saeki et al.,[8,9,12]. This method was used during lapascopic surgeries on the stomach in those patients with cancer stomach for retraction of lateral liver segment. In this method, a leaf-shaped silicone is used with a created loop using 2–0 monofilament polypropylene suture. After performing the necessary suture, the silicone disc is inserted into the abdominal cavity and put underneath the liver where traction is applied to the suture, allowing the disc to lift and suspend the lateral segment of the liver. when exact time is needed to prepare the silicone disc before use during the surgical procedure. Another technique that use a percutaneous approach to liver retraction is described by Giannietal.[10,16], which use a15-cmVerrus needle. After insertion percutanously into the subxiphoid area, the needle is covered by a16 to 18 French nasogastric or tube drainage. An angle is created at the covered tip of the needle, allowing for easy liver retracting. This technique reduces the need for additional incisions, trocars and retractors, but may not provide adequate support for retraction and suspension of larger livers, which are frequently encountered in morbid obese patients. Goel et al.,[3,11]

Conclusion

The aim of this paper is to describe an easy technique for liver retraction and highlight the fact that this has been used by us as the only method of liver retraction in bariatric cases. The stone forceps retractor can be used safely to obtain adequate retraction of the left lobe of the liver during laparoscopic bariatric surgeries over a wide range of BMIs. We have also found that the metod is associated with short operative times and ease of maneuverability during repositioning if necessary.

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