ORIGINAL ARTICLE

Tubulation with Intermittant Knotting: A New Method in Gallbladder Retrieval in Laparoscopic Cholecystectomy

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ABSTRACT

The aim in laparoscopic cholecystectomy is to cause minimal postoperative pain in patients by reducing the number and diameter of the trocars used, as well as to minimize the development of scar at the incision site. However, during the retraction of the gallbladder more serious problems may occur. Although several methods are suggested to securely extract the gallbladder, these methods have some limitations. Here, a new technique is presented to facilitate the retrieval of the gallbladder by knotting around it and changing its form from a saccular shape with a wide diameter, to a tubular form with a narrower diameter. This technique was completely sufficient in nine of twelve patients. Less traction force and maneuver is needed with this technique. Thus risk of complications lowers and duration of gallbladder retrieval shortens.

Key words: Laparoscopic cholecystectomy, Gallbladder retrieve

ÖZET


Anahtar kelimeler: Laparoskopik kolesistektomi, Kese çıkarma
INTRODUCTION

Laparoscopic cholecystectomy (LC) with four ports is a standard treatment of cholelithiasis. Yet, micro laparoscopic cholecystectomy methods that reduce the number and diameter of the trocars have been developed in order to be less invasive. It is reported that this method causes less postoperative pain and less scarring\cite{1,2}. However, the difficulty of extracting the gallbladder through a small port may cause complications that will yield the above concerns irrelevant\cite{3}.

This study presents a new technique that facilitates gallbladder retrieval without the need for intensive traction.

TECHNIQUE

Normally, during the traction of a gallbladder the gallstones are gathered and impacted at the fundus. As a result, the diameter at the fundus increases and the gallbladder takes a saccular form. With the technique described in this study, the gallbladder is transformed into a long tubular form with a narrow diameter, which requires less traction force. The technique is applied as follows: extracorporeal sliding knots are advanced with some No: 1 silk suture. If the silk suture is shorter than 50 cm, two sutures are attached. During or after complete dissection from the liver, 2-3 cm apart ligations are made around the gallbladder with the sliding knots. While the longer tail of the suture is pulled extracorporeally, the shorter tail is slid with a laparoscopic grasper. The number of knots may vary from 1 to 3 depending on the size and stone content of the gallbladder. The knots should not be pulled too tight during knotting (Figure 1). In this manner, the gallstones are in the middle and infundibular parts, and the gallbladder will be of a narrow tubular form. As the diameter of the gallbladder is smaller, less traction force and maneuver is required. Moreover, the need to widen the port site usually disappears.

This technique was applied on 12 patients in our department. In three of the 12 patients the technique proved insufficient on its own. In one of these patients, a 24 mm long axed oval gallstone was impacted transversely in the infundibulum, and therefore, an incision extension was made to the port site. In the second patient, the surgeon had to dilate the port site with his finger as the knot placed at the fundus created a shape with a diameter of 2 cm. The gallbladder of the third patient contained multiple and large gallstones and by extracting these one by one the gallbladder was emptied and removed from the abdomen. The gallbladders of the remaining 10 patients were extracted in shorter time and without the need for forceful traction or dilatation at the port site.

DISCUSSION

In LC, the ratio of gallbladder perforation and gallstone spillage reaches up to 36\%\cite{4}. In some of these cases, ruptures occur during the traction of the gallbladder, and as a result, bile and gallstones are spilled into the abdomen. In addition, when the port site is contaminated with bile or when gallstones are left, infection develops. Furthermore, other complications can occur, such as tumor cell implantation or the surgeon’s being contaminated with the patient’s blood and bile due to eruption of the gallbladder while pulling it off the abdominal wall.

Preventing gallstone and bile spillage during forceful traction is possible through the use of commercial or modified retraction bags\cite{5}. However, extraction of the gallbladder often becomes time consuming. Although several technological products and methods are suggested to facilitate this stage, problems occurring during retraction have not been completely remedied and generally widening of the port site is required\cite{6-8}. This increases the risk of bleeding, hematoma and infection, and also constitutes a risky area for incisional hernia\cite{9}.

Through knotting, gallstones are arranged on a long axis and the diameter of the gallbladder is reduced. In this way, less force needs to be applied during traction and the need to widen the port site is eliminated. Although placing the knots on the gallbladder takes a few minutes, the gallbladder is
removed from the abdomen faster, which considerably reduces total operative time. Preventing the above mentioned complications is to some extent possible with this technique.

There may be doubts as to the benefit of this technique with single or multiple large gallstones. However, it is known from clinical trials that gallbladders containing a single stone and bile also create problems during traction. In these patients, bile occupies volume and may cause an increase in the diameter of the fundus. Thus, the knotting technique can be recommended in the case of a single stone as well. In the case of multiple large stones, isolating the stones into small compartments will prevent large stones from impacting each other and prevent troublesome discharge of the gallbladder content. Furthermore, the cost of the No: 1 silk suture is lower than that of applications with a bag or glove.

To conclude, it is believed that the knotting technique requires less traction force on the gallbladder, facilitates the extraction of the gallbladder, and at least reduces the manipulations during retraction. Further study of this issue is in progress.

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REFERENCES


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