

Research Article**Control of Cystic Artery Using Monopolar Electrocautery in Laparoscopic Cholecystectomy: Our Experience****Anurag Chauhan¹, Ajay Gangji², Amol Singhal^{3*}**¹Assistant Professor, Department of Surgery, G.R. Medical College, Gwalior, Madhya Pradesh, India²Associate Professor, Department of Surgery, G.R. Medical College, Gwalior, Madhya Pradesh, India³P.G. student, Department of Surgery, G.R. Medical College, Gwalior, Madhya Pradesh, India***Corresponding author**

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Abstract: The objective was to study the use of monopolar electrocautery for securing hemostasis of cystic artery in patients undergoing laparoscopic cholecystectomy. This was a retrospective observational study that was carried out in our institute. Total of 276 patients (246 females and 30 males) who underwent laparoscopic cholecystectomy from April 2005 to March 2013 where monopolar electrocoagulation was used were included in the study. The study included total of 276 patients with a mean age of 44.2 yrs and a male to female ratio of 8.2:1. 6 patients (2.1%) were converted to open procedure due to (a) adhesions at the Calot's triangle (1.1%), (b) bleeding from cystic artery (0.7%) and (c) bleeding from liver bed (0.3%). In the remaining patients, wound infection was present in 12.3% of the patients. None of the patients had postoperative bleeding as evidenced by the drain output and other measures including postop. monitoring of vitals and palpation of abdomen. In conclusion, monopolar cautery is an effective method to control the cystic artery during laparoscopic cholecystectomy and its use can be encouraged in developing countries which lack the resources for Harmonic Scalpel.**Keywords:** Cholelithiasis, Laparoscopic Cholecystectomy, Monopolar electrocautery, Cystic artery

INTRODUCTION

Laparoscopic cholecystectomy is considered to be the gold standard treatment for cholelithiasis [1]. During this, titanium clips are used to secure the cystic duct and artery [2]. There are many complications that have been found to be associated with the use of clips like accidental clipping of cystic duct leading to obstruction, strictures, slippage of clips etc. So 'Clipless Laparoscopic Cholecystectomy' has found its use in the form of various devices used to control the cystic artery like tie whether absorbable [2] or nonabsorbable [3], Harmonic Scalpel (HS) [4, 5], monopolar [6, 7] or bipolar electrocoagulation [8] have been tried. Even procedure involving not handling the cystic artery has been tried [9]. But due to the cost issues, HS has been less frequently used for this purpose. Monopolar electrocoagulation can be used to control the cystic artery as it is cheap and universally available. Herein we describe our experience with this in our institute.

MATERIAL AND METHODS

This was a retrospective observational study that was carried out in our institute. Total of 276 patients (246 females and 30 males) who underwent laparoscopic cholecystectomy from April 2005 to March 2013 where

monopolar electrocoagulation was used were included in the study.

The surgery was done as per American setup and conventional 4-port technique was used. All patients were operated under elective setting. After the dissection of the Calot's triangle, the cystic duct was clipped and artery was coagulated using monopolar cautery. Drain was placed in all the patients. The data was collected from the case records and results analysed.

RESULTS

The study included total of 276 patients with a mean age of 44.2 yrs and a male to female ratio of 8.2:1. 6 patients (2.1%) were converted to open procedure due to (a) adhesions at the Calot's triangle (1.1%), (b) bleeding from cystic artery (0.7%) and (c) bleeding from liver bed (0.3%). In the remaining patients, wound infection was present in 12.3% of the patients. None of the patients had postoperative bleeding as evidenced by the drain output and other measures including postop. monitoring of vitals and palpation of abdomen.

DISCUSSION

Laparoscopic cholecystectomy is considered to be the gold standard procedure for laparoscopic cholecystectomy [1]. The clips used for securing the cystic pedicle has been found to have complications like slippage leading to bleeding etc. So 'Clipless Laparoscopic Cholecystectomy' has been tried. Multiple options exist for the control of cystic artery like HS, monopolar or bipolar electrocoagulation. But due to the cost issues, HS has not found use in developing countries, so electrocoagulation can be tried.

Redwan AA [4] conducted a study that included 160 patients undergoing laparoscopic cholecystectomy and compared HS with clips/cautery. They concluded that HS is as effective as the clip/cautery technique in laparoscopic cholecystectomy achieving hemobiliary stasis, with shorter operative time.

Katri *et al.* [6] conducted a study in which they included 158 patients in which they studied the use of monopolar cautery for controlling the cystic artery in 114 patients and clips in 33 patients. They recorded no bleeding complication during the period of the study. They concluded that monopolar cautery can be used to control the cystic artery in laparoscopic cholecystectomy.

Soper NJ *et al.* [7] conducted a study in pigs and assessed the efficacy of monopolar cautery for controlling the cystic duct and artery during laparoscopic cholecystectomy in the pigs. They concluded that monopolar cautery is an efficient method of controlling the artery and duct and no adverse changes in the gall bladder bed or hepatocyte regeneration or cholestasis are observed as evidenced by the pathologic studies carried out in the pigs.

In our study, a total of 6 patients were converted into open procedure. Out of the remaining 270 patients, none of the patients bled postoperatively, thus signifying the effectiveness of monopolar electrocoagulation. Also the avoidance of clips leads to the theoretical risk of clip slippage and postoperative bleed in the patients. This is in concordance with the above mentioned studies. So monopolar cautery is an effective method to control the cystic artery during laparoscopic cholecystectomy.

CONCLUSION

We conclude that monopolar cautery is an effective method to control the cystic artery during laparoscopic cholecystectomy and its use can be encouraged in developing countries which lack the resources for Harmonic Scalpel. Further randomized controlled trials have to be conducted to further validate our findings.

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