ABCDDV/951

ABCD Arq Bras Cir Dig
2013;26(3):179-183

Original Article

LAPAROSCOPIC CHOLECYSTECTOMY WITH SUPRAPUBIC APPROACH

Colecistectomia laparoscópica com abordagem supra-púbica

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ABSTRACT - ***Background***: The laparoscopic cholecystectomies performed through single site surgery, despite undoubted aesthetic results, are costly and technically difficult to be performed. The suprapubic approach presents as a simpler and cheaper alternative with good aesthetic results. ***Aim***: To report the experience of Garavelo Hospital on laparoscopic cholecystectomy with suprapubic approach. ***Methods***: Descriptive, crossectional study with retrospective data retrieval. The variables to be analyzed were success rate; occurrence of complications; surgical time and the length of stay. ***Results***: The sample consisted of 42 patients, of which females were predominant (76.2%). The age ranged from 18 to 65 years with an average age of 36 years. The success rate was 95.3%. The average time for the procedure was 33.4 minutes. There were no intraoperative complications and all patients were discharged within 24 hours after surgery. ***Conclusion***: Laparoscopic cholecystectomy with suprapubic approach is safe and easy to domain. It can be performed in a time similar to traditional laparoscopy, without special instruments. It offers a good cosmetic result, and deserves more attention.

HEADINGS - Cholelithiasis. Laparoscopy. Laparoscopic cholecystectomy.Techniques.

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Financial source: none
Conflicts of interest: none

Received for publication: 21/02/2013
Accepted for publication: 21/05/2013

RESUMO - ***Racional***: As colecistectomias laparoscópicas realizadas através de acesso abdominal único, apesar de seu inquestionável resultado estético, são procedimentos de custo elevado e tecnicamente difíceis de serem realizados. A abordagem supra-púbica é alternativa mais simples e barata com bom resultado estético. ***Objetivo***: Relatar a experiência do Hospital Garavelo com a colecistectomia laparoscópica com abordagem supra-púbica. ***Método***: Estudo descritivo de delineamento transversal e coleta retrospectiva dos dados. Foram avaliados o tempo cirúrgico, taxas de sucesso e de conversão para procedimento laparoscópico tradicional ou mesmo operação aberta, bem como a ocorrência de complicações intra ou pós-operatórias e tempo de internação. Os dados foram coletados através de instrumento criado especificamente para realização do estudo, permitindo a coleta de dados quantitativos dos registros hospitalares e observações feitas durante avaliações ambulatoriais. ***Resultados***: A amostra foi constituída por 42 pacientes. O sexo feminino foi predominante (76,2%). A média de idade foi de 36 anos (18-65). A taxa de sucesso foi de 95,3%. O tempo médio para realização do procedimento foi de 33,4 minutos. Não houve complicações intra-operatórias e todos os pacientes receberam alta hospitalar nas primeiras 24 horas após a operação. ***Conclusão***: A colecistectomia laparoscópica com abordagem supra-púbica é técnica segura, de fácil domínio, com bom resultado estético, podendo ser técnica alternativa para os procedimentos convencionais.

DESCRITORES - Colelitíase. Laparoscopia. Colecistectomia laparoscópica. Técnicas.

INTRODUCTION

The use of a suprapubic approach to perform laparoscopic cholecystectomy is not recent. It's first report date from 1995 by Degano *et al* [7] in Italy. Nowadays seventeen years after this original report only a few published articles can be found in medical literature. This fact may be related to the widespread interest in other minimally invasive techniques, like Natural Orifice Endoscopic Translumenal Surgery (NOTES) and Single Site/Port Surgery (SSS)[1,13,14]. Despite the great interest of the

international surgical community in NOTES and SSS procedures, some issues about safety and costs remains

In the last years a renewed interest with the use of suprapubic cholecystectomy can be observed in North America, Europe and Asia[3,5,8-12,15,16]. The low cost associated with this procedure, such as no disposable or specific instruments are required in this type of procedure and the preservation of some basic laparoscopic principles makes this technical variant an interesting option that could and should be better explored.

This retrospective study reports the experience of the cited institution with this technique.

METHODS

The medical records of patients who underwent a suprapubic laparoscopic cholecystectomy in Garavelo´s Hospital between February 2011 and February 2012 were retrieved and analyzed. The study project was submitted and approved by the Committee on Ethics Research number CAAE 01351812.6.0000.0033.

The study was conducted at the department of general and digestive surgery of Garavelo´s Hospital with collaboration of surgical residents of Santa Genoveva´s Hospital. The study group consisted of 42 patients (32 females and 10 males) submitted to suprapubic laparoscopic cholecystectomy during the study period from both public and private clinics. For this study a specific form was created to collect both quantitative and qualitative data. The software EPI-INFO was utilized to analyze the data collected. Due the small size of the sample the fisher's test was select to determine statistical significance.

Operative technique

The patients were placed in dorsal decubitus, with right arm parallel with the body. The surgeon and assistant stayed in the left of patient and the laparoscopy set was placed on the right.

In the inicial cases a Foley catheter was placed and withdrew at the end of the procedure. This practice was after abandoned and nowadays is asked the patient to urinate before referral to the surgical center. The pneumoperitoneum was established using a Veress needle in patients without previous abdominal surgical procedure and by Hasson´s technique in those patients with previous manipulation on abdomen or pelvis. The abdomen is insufflated to a pressure of 15 mmHg and the laparoscopic ports are placed.

The initial access was obtained with 12 mm port for a 5 mm laparoscope. Peritoneal cavity was inspected and the feasibility of suprapubic surgery was estimated. If the surgical team agreed, two additional 5 mm ports were placed in suprapubic region just above the urinary bladder and in the lateral margin of rectus abdominal muscle (Figure 1).

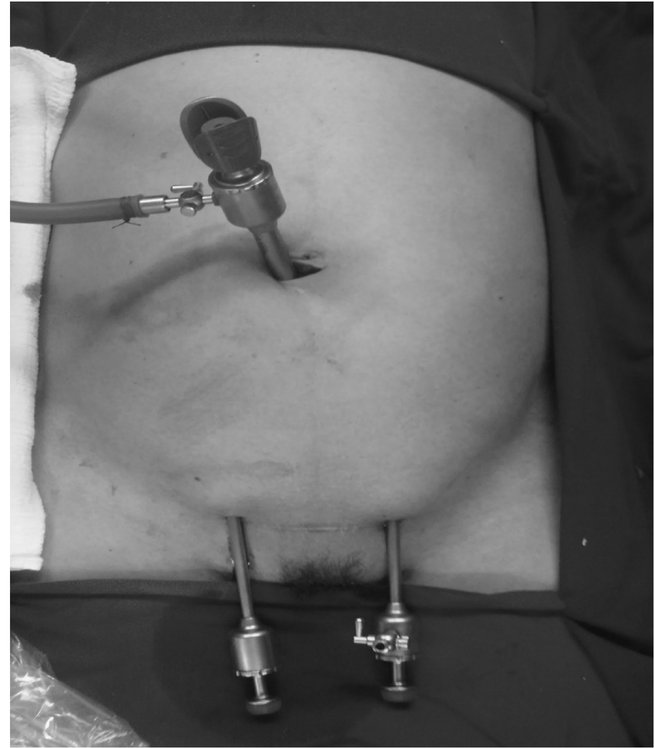

FIGURE 1 - Ports position in suprapubic cholecystectomy

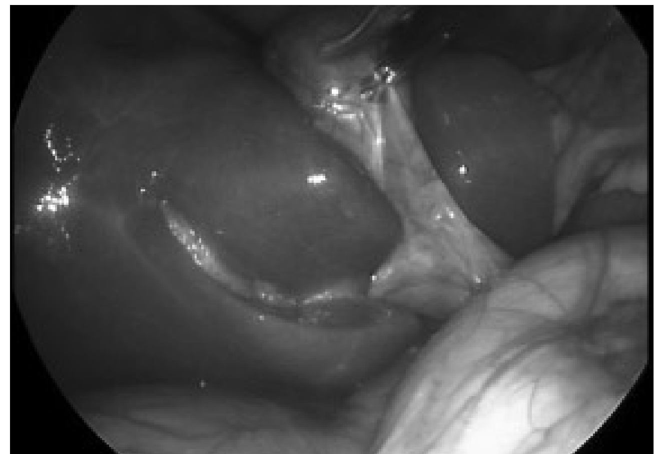

FIGURE 2 - Laparoscopic view through the left suprapubic port

At this point the optics was moved from the umbilical to the left suprapubic port. The right suprapubic port was used to traction of gallbladder and umbilical port for dissection and clipping. The view obtained at suprapubic port was very similar to that obtained in common laparoscopic cholecystectomy adding no risk to the procedure (Figure 2).

In the first cases, or in every case with difficult exposure, an additional 3 mm port was inserted low in right flank, between anterior and middle axillary lines to traction of gallbladder fundus (Figure 2).

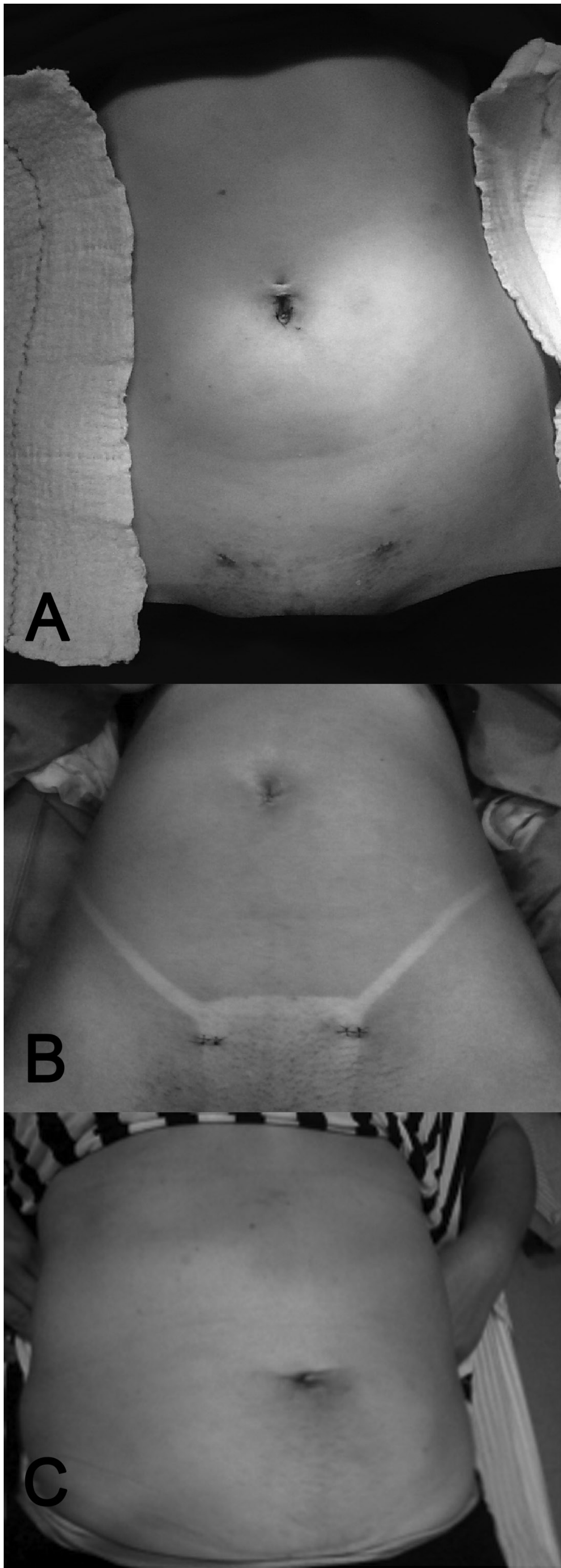

FIGURE 3 - Immediate postoperative aspect: A) pacient with previous cesarean section; B) without previous incision; C) postoperative day 30

The following steps were identical to common laparoscopic surgery and the gallbladder was retrieved in a protective bag by the umbilical incision. The umbilical aponeurotic defect was closed with absorbable sutures. The skin defects were closed with mononylon sutures (Figure 3).

RESULTS

The study included 42 patients of which 76.2% (n=32) were female and 23.8% (n=10) male. The age ranged between 18 and 65 years, with a mean of 36 years. Patients from public clinic represent 52.4% and the patients from private clinic represent 47.6% of the total.

The procedure was completed with success in 95.3% of patients (n=40). In one an additional port in the right hipocondrium was needed to provide safe exposure of gallbladder pedicle. In another patient the procedure was converted to a classic laparoscopic procedure due to poor anatomic view. The use of a 3 mm port in the right flank was used in 31% (n=13) of cases, more frequently in the first cases. The surgical time in this series was 33,4 min (SD-7.95 min). All patients were discharged in the first 24 hours. During the first visit, between postoperative days 7 to 14, the presence of subcutaneous fluid collection was observed in three cases, all treated with needle aspiration. During the following office visit in post operative day 30 none patient refer pain or other complain that compromise their daily activities.

DISCUSSION

The first report of this technique occured in 1995 by Degano *et al*.[7] In the following years other authors modified the original technique. In this series the modification proposed by Legget *et al* in 2001 was utilized[12]. One point which deserves mention is the quality of the laparoscopy set used. The newer devices that provide the possibility of zoom makes a great approximation by optics unnecessary, thus helping to prevent a swordfight effect between surgeon and assistant. This kind of problem is common with the use of a single site/port technique making the suprapubic approach comfortable to the surgeons.

The literature search retrieved only ten results, nine published case series or case reports, one poster presentation[16] at the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) annual meeting. There is another series, in a personal webpage, but the reported data cannot be found in any indexed publications, but this surgeon figures as coauthor of the work present by Spindelet *et al*[16] at the SAGES meeting.

Analyzing all the published series 275 suprapubic laparoscopic cholecystectomies were

performed since it's original description seventeen years ago. The overall conversion rate was 1.04% (n=2) demonstrating a good adaptation by surgical teams using this technique. However since there is no standardization of the technique used by the various authors some observations must be highlighted. Both Degano *et al* [7] and Spindelet[16] *et al* who together represent 41% (n=113) of the procedures realized until now, begins their procedures with a subxifoid portal which by itself is considered a conversion to a traditional procedure. The reason is that the insertion of a laparoscopic portal in the upper part of anterior abdominal wall determines an esthetic loss which is in fact the only advantage of this type of surgery. It is important to remember that the only gain with the use of single site/port techniques is also an esthetic one, with no functional benefits clearly demonstrated. The use of a suprapubic approach produces an excellent cosmetic result similar to that seem with single site/port techniques. But as this technique results in less tense wounds, one can expect fewer complications like chronic pain or incisional hernia[2].

The majority of cases reported consist of previously selected patients excluding obese patients and more complicated cases, so additional evaluations are needed before of use this technique as routine in everyday practice.

The data reported by the diverse authors indicate a surgical time of 39.86 minutes, and none per- or postoperative complications. Degano *et al* [7] report a conversion rate to traditional laparoscopic procedure in 6.8% of cases. The majority of the patients were discharged in the first 24 hours; however an author refer to cases with five days of hospitalization with no detailed reason demanding caution with the mention of no surgical complications[11].

In general the data obtained in this study did not differ from those reported in medical literature. The conversion rate was 4.7% (n=2), above the 1.04% in total cases reported when all series are compiled but without statistical significance (p=0.15). But this type of analyzes is difficult as the term conversion has different meanings for diverse authors. The average surgical time in this series was 33.4 minutes significantly below the overall result observed in literature which was of 40 minutes (p<0,0001), however this difference has little impact in clinical practice.

There are no surgical complications in this case series similar to those reported in the literature. During postoperative visits the presence of subcutaneous collection was observed in 7% (n=3) of cases, all of them treated with needle aspiration successful.

Despite the use of three abdominal ports in this type of surgery, the suprapubic ports are located on habitually unexposed area and exists the possibility to use a previous scar from gynecological or obstetric procedures. The surgical time is similar to traditional laparoscopic cholecystectomy as it preserves in some way the triangulation principle. Regarding the costs it is essentially the same as for the traditional laparoscopic cholecystectomy, because only reusable laparoscopic materials are utilized.

CONCLUSION

The suprapubic laparoscopic cholecystectomy is safe and is associated with good esthetic and functional results. It can be completed in a very similar time compared to common laparoscopic procedure. The utilization of reusable material only provides a huge reduction in the final cost of the procedure. The relative preservation of the triangulation principle permits an easier adaptation by surgical team.

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