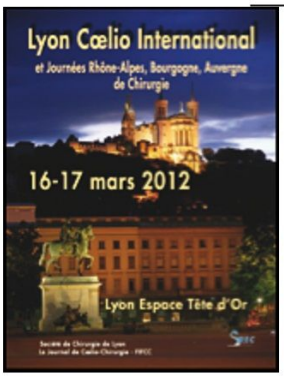
SREC Diffusion

Le Journal de Cœlio-Chirurgie
The European Journal of Laparoscopy



Dr Mohamed Elsayed Abdellatif
Dep. 7
Dep. Of surgery
Mansoura University Hospital
Mansoura, Egypt

Valence, December 13th 2011

Subject : Acceptance of your manuscript for publication

Dear Doctor Abdellatif,

Experts in the field have carefully reviewed your article entitled

« A new technique for gallbladder fundus retraction in single incision laparoscopic cholecystectomy » with co-author Dr Mahmoud A. Wahby.

I am pleased to inform you that the reviewers recommend publication of this article in the European Journal of Laparoscopy : www.coelio-surgery.com but also in one of the forthcoming issues of the *Journal de Coelio-Chirurgie*.

Sincerly yours,

Dr Edmond Estour
Head of publishing and Director

A NEW TECHNIQUE FOR GALL BLADDER FUNDUS RETRACTION IN SINGLE INCISION LAPAROSCOPIC CHOLECYSTECTOMY

Mohamed E. Abellatif MD1, Mahmoud A. Wahby MD2

Mansoura - EGYPT
Mansoura University Hospital

Over the last few years, SILS (single incision laparoscopic surgery) is being utilized increasingly in various procedures; single-incision laparoscopic cholecystectomy (SILC) is the most common one of these procedures [1, 2]. *One of the fundamental step in laparoscopic cholecystectomy is to visualize Calot's triangle to obtain the critical view described by Strasberg et al. 1995* [3]. *This can be easily done in the conventional 4 ports laparoscopic cholecystectomy using the ancillary ports. However, in order to minimize the number of ports, there are few methods available for gall bladder (GB) retraction in SILC that can substitute the usage of ancillary ports imitating retraction from conventional technique, e.g. trans-parietal stitch* [4, 5], *mini-loop retractor* [6], *a Kirschner wire* [7].
We applied the transparietal stitch in our previous paper [8], *but we had to introduce it in the last intercostal space to avoid lung injury and that may lead to pneumothorax. However, the disadvantage of this method is that the gall bladder is retracted perpendicular instead of cephalad direction and making some degree of masking of the Calot's triangle and in some patients. It would be necessary to place additional sutures in the body and infundibulum for adequate exposure* [9]. *We describe a novel technique for GB fundus retraction in SILC procedure.*

KEY WORDS : Cholecystectomy, Gall bladder, Retraction.

TECHNIQUE

Introducing the suture material intraperitoneally:

After insufflating the abdomen, a small transverse trans-umbilical incision was done. Then two 10 mm ports were introduced, keeping a fascial bridge in between, the telescope was introduced through the right one, and a grasper was introduced through the left lateral port holding the fundus and retracting it cephalad toward the patient's right axilla till reach to a proper point at which Calot's triangle was easily visualized and making a mark in the diaphragm at that point. A 2/0 suture of full length was introduced with a 30 mm needle inside the abdomen through the port to the left. We prefer to use braided material such as polyglycolic for its excellent knotting qualities and it allows easy manipulation of the tail end.

Passing the needle through the fundus then the diaphragm at the above mentioned point, then the needle end of the suture was taken outside through the left lateral port keeping the other end inside (Fig. N° 1A, 1B).

Following the same steps described before by Thanakumar and John [10], the tip of suture inside was hold with a needle holder and pulled around to form an 'O' shaped loop with an over wrap. The needle holder was passed through the 'O' shaped loop, while the surgeon' non-dominant hand holds the external end of the suture without making tension. The surgeon starts slowly to apply a gentle traction on the outer end of the suture, then eases the needle holder and takes it out of the 1st 'O' then holds the tip again and applies a counter traction against his non-dominant hand securing the 1st knot. The same steps were done repeatedly the same manner till reach the intended number of knots (Fig. N° 2A, 2B, 3A, 3B).

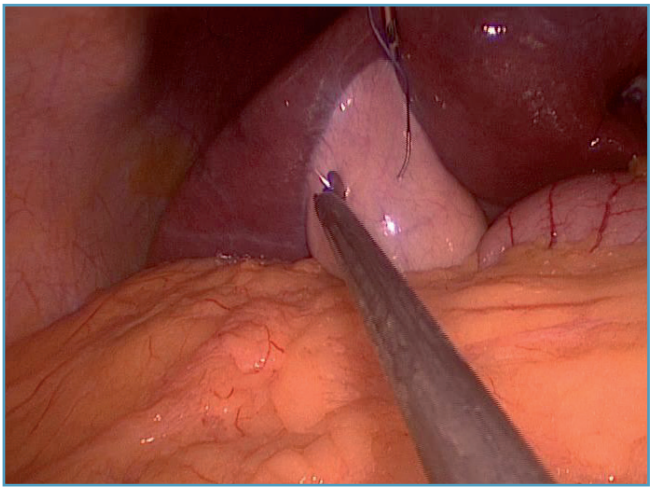


Fig. N° 1A *Passing the needle in both the fundus of gallbladder and the diaphragm*

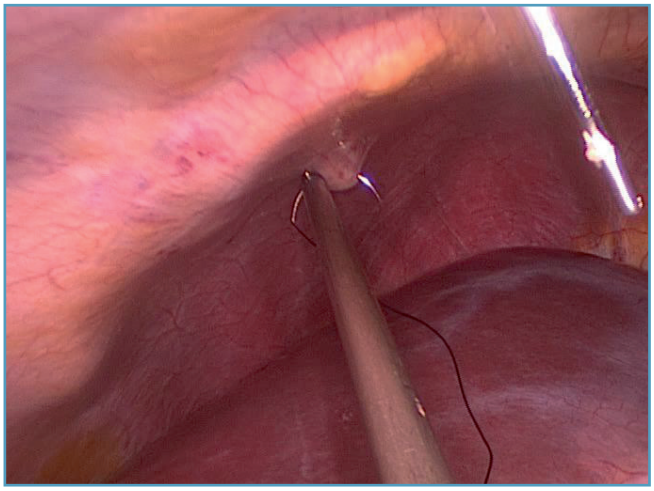


Fig. N° 1B *Passing the needle in both the fundus of gallbladder and the diaphragm*

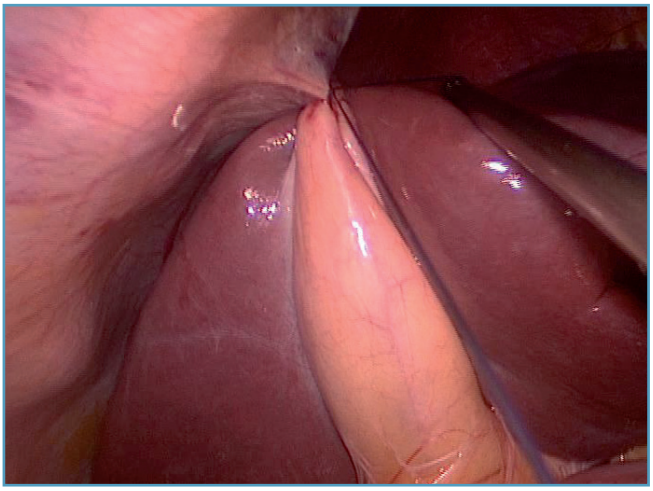


Fig. N° 2C *Making the first O followed by the 2nd one then the stitch is cut*

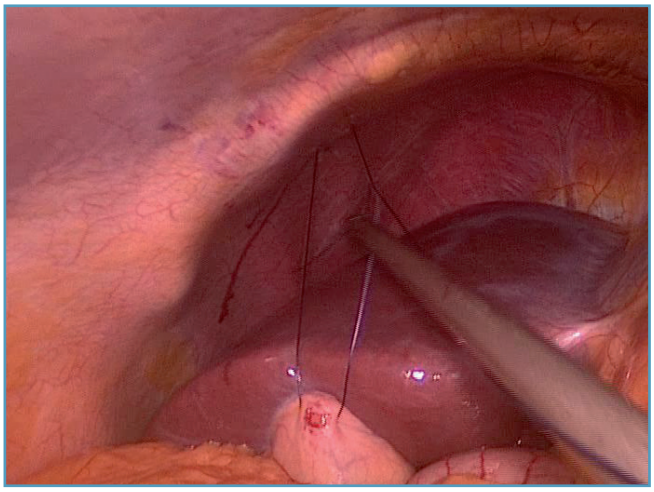


Fig. N° 2A *Making the first O followed by the 2nd one then the stitch is cut*

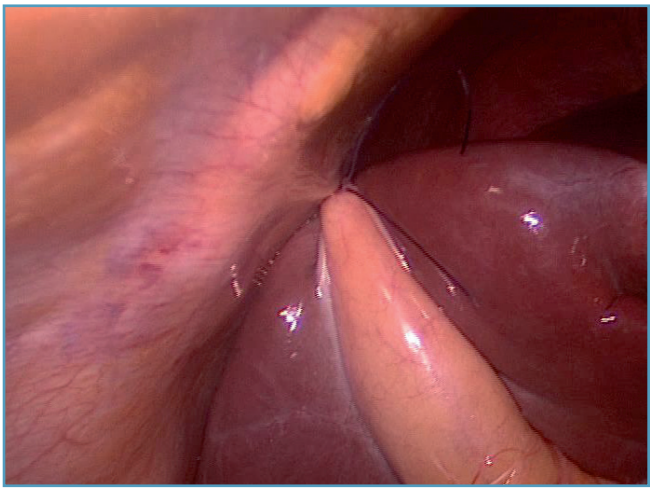


Fig. N° 3A *End stage of the stitch*

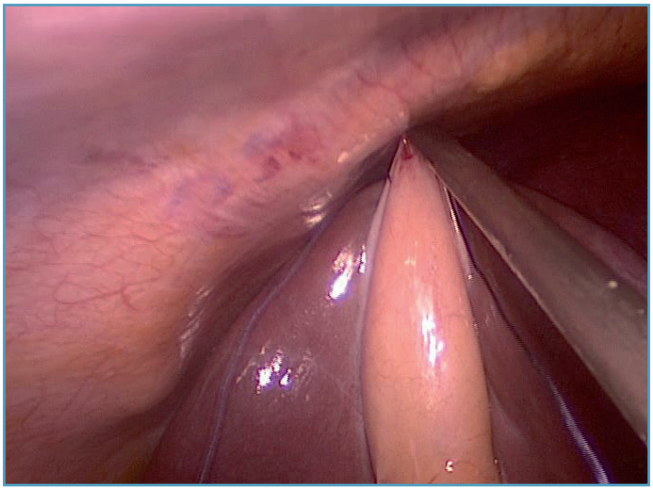


Fig. N° 2B *Making the first O followed by the 2nd one then the stitch is cut*

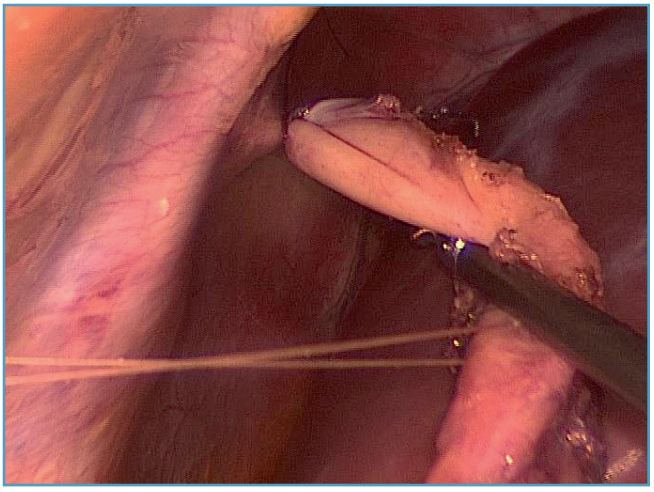


Fig. N° 3B *End stage of the stitch*

DISCUSSION

One of the various techniques applied for gall bladder retraction is the transparietal stitches that we did use in our previous paper but we always feel inadequate upward retraction that makes the Calot's triangle not easily visualized. Some authors had to use another methods to overcome this drawback; Hirano et al [6] used a 2-mm mini-loop retractor (Mini-loop retractor ; Hakkou-shoji) introduced through an extra puncture in the right subcostal region to suspend and retract the fundus of the gall bladder after tightening with a looped wire thus enabling the surgeon to retract the gall bladder for visualizing Calot's triangle.

Cuesta et al. [7] used a Kirschner wire (ø 1mm) inserted through an extra puncture in the right subcostal region, then it is bent by a certain device introduced through the left umbilical port to suspend and retract the fundus of the gall bladder for optimal visualization of the Calot's triangle. Others introduced one more port through the umbilicus for that job but increasing the possibility of instruments clashing [11].

We describe this novel technique to retract the gall bladder properly based on the one handed knot which refers to a knot that is tied with one end of the suture kept in one hand while the second hand is manipulating all the steps necessary to form the knot. In the literature this technique was described previously in only three reports previously. Ou et al [12] described one handed knot for ligation of the renal pedicle during hand-assisted retroperitoneoscopic nephrectomy, Ieong et al [13] also described this technique for closure of the internal ring during laparoscopic repair of inguinal hernia in children, and Thanakumar and John [10] described this technique in ligation of both cystic artery and duct during single-incision laparoscopic cholecystectomy.

We have used this technique over 17 cases and found it to be feasible, effective and it offers great retraction of the fundus and giving optimal visualization of Calot's triangle. It would not require any instruments other than those available in a conventional laparoscopic set.

Conflict of interest statement: (top author's name) and other co-authors have no conflict of interest.

[1] General Surgical Department
Faculty Of Medicine
Mansoura University
Mansoura - Egypt
[2] General Surgical Department
Jahra Hospital - Kuwait.

Correspondance
Mohamed E. Abd Ellatif
surg_latif@hotmail.com

SUMMARY

Purpose: Single incision laparocopic cholecystectomy (SILC) is an emerging procedure that found acceptance from many surgeons worldwide; we developed a new technique for gall bladder retraction.

Methods: Using the one handed knot tying technique in laparoscopic surgery, an intracoprpreal stitch has been taken between the fundus of the gall bladder and the diaphragm from inside at a certain point that gives a proper retraction of the gall bladder upward toward the patient's right axilla exactly in a same manner like what is usually done in the standard 4 ports laparoscopic cholecystectomy.

Results: We have applied this new technique over 17 cases of SILC and it offers great retraction of the fundus making the Calot's triangle easily identifiable. It would not require any instruments other than those available in a conventional laparoscopic set.

Conclusion: This new technique is proved to be safe, effective, and easily reproducible.

RÉSUMÉ (KEY WORDS : Cholécystectomie, Vésicule, Rétraction)

Objectif: La cholécystectomie laparoscopique à une seule incision (SILC) est une technique émergente qui a été acceptée par de nombreux chirurgiens dans le monde. Nous présentons et discutons d'un nouveau procédé pour la présentation du triangle de calot par rétraction de la vésicule.

Méthodes : En utilisant la technique laparoscopique du nœud poussé, une suture intracorporelle est mise en place entre le fundus de la vésicule et le diaphragme, de dedans en dehors et en haut, en direction de la région axillaire droite du patient, à un endroit précis qui permet une bonne rétraction de la vésicule exactement comme elle est réalisée pour une cholécystectomie laparoscopique standard à 4 trocarts.

Résultats : Nous avons pratiqué cette nouvelle technique sur 17 cas de SILC ; elle assure une rétraction du fundus qui permet une bonne identification du triangle de Calot. Elle ne demande pas d'autres instruments que ceux utilisés dans un set de laparoscopie standard.

Conclusion : Ce procédé s'est montré sûr, efficace et facilement reproductible.

RIASSUNTO (PAROLE CHIAVE : Colecistectomia, Colecisti, Retrazione)

Scopo del lavoro : la colecistectomia laparoscopica a singolo accesso (SILC) è una tecnica emergente accettata da numerosi chirurghi nel Mondo. Presentiamo e discutiamo una nuova tecnica per l'esposizione del triangolo di Calot tramite retrazione della colecisti.

Metodi : utilizzando la tecnica laparoscopica, si realizza una sutura intracorporea tra fondo della colecisti e diaframma, da dentro in fuori ed in alto, in direzione della regione ascellare destra del paziente, in un punto preciso che permette una buona retrazione della colecisti, esattamente come viene realizzato durante una colecistectomia laparoscopica standard con 4 trocars.

Risultati: abbiamo utilizzato questa tecnica in 17 casi di SILC; questa tecnica assicura una retrazione del fondo che permette una buona identificazione del triangolo di Calot, senza necessità di strumenti ulteriori rispetto a quelli di un set laparoscopico standard.
Conclusioni: questa tecnica si è dimostrata sicura e facilmente riproducibile.

REFERENCES

1 - CHOW A, PURKAYASTHA S, AZIZ O, PARASKEVA P. : Single-incision laparoscopic surgery for cholecystectomy: An evolving technique. : *Surg. Endosc. 2010;24:709–14.*
2 - KIRSCHNIAK A, BOLLMANN S, POINTNER R, GRANDERATH FA. : Transumbilical single-incision laparoscopic cholecystectomy: Preliminary experiences. : *Surg. Laparosc. Endosc. Percutan. Tech. 2009;6:436–8.*
3 - STRASBERG SM, HERTL M, SOPER NJ. : An analysis of the problem of biliary injury during laparoscopic cholecystectomy. : *J. Am. Coll. Surg. 1995;180:101-25.*
4 - KHAMBATYF, BRODY F. : Laparoscopic Versus Single-Incision Cholecyste-ctomy. : *World J. Surg. 2011; 35:967–972.*
5 - CHANG SK, TAY CW, BICOL RA, LEE YY, MADHAVAN K. : A Case-control Study of Single-Incision Versus Standard Laparoscopic Cholecystectomy. : *World J. Surg. 2011; 35:289–293.*
6 - HIRANO Y, WATANABE T, UCHIDA T, ET AL. : Single-incision laparoscopic chole-cystectomy: Single institution experience and literature review. : *World J. Gastroenterol. 2010 ; 16:270-274.*
7 - CUESTA MA, BERENDS F, VEENHOF AA. : The "invisible cholecystectomy": A transumbilical laparoscopic operation without a scar. : *Surg. Endosc. 2008; 22:1211–1213.*
8 - ABDELLATIF ME, ASKAR WA, ELMORSY G, ELLITHY R, AMIN M, ELNAKEEB A. : Conventional Laparoscopic Versus Single-Incision Laparoscopic Cholecystectomy: a pilot study. : *Surg. Today 2011 (in press).*
9 - FRONZA JS, LINN JG, NAGLE AP, SOPER NJ. : A single institution's experience with single incision cholecystectomy compared to standard laparoscopic cholecystectomy. : *Surgery 2010; 148:731-4.*
10 - THANAKUMAR J. AND JOHN PH. : One-handed knot tying technique in single-incision laparoscopic surgery. : *J. Minim. Access Surg. 2011; 7(1): 112–115.*
11 - PRASAD A, MUKHERJEE KA, KAUL S, KAUR M. : Postoperative pain after cholecystectomy: Conventional laparoscopy versus single-incision laparoscopic surgery. : *J. Minim. Access Surg. 2011; 7: 24–27.*
12 - OU CH, YANG WH. : Intracorporeal one-hand tie technique for renal pedicle ligation during hand-assisted retroperitoneoscopic nephrectomy. : *Urology 2007;70:994–5.*
13 - IEONG E, HAJI G, GATHANI T, SADRI A, NOTT D. : The one-handed knot technique: The Nott technique. : *Ann. R. Coll. Surg. Engl. 2009;91:513–4.*