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Research Article

PREVENTION OF UMBILICAL SKIN NECROSIS AND UMBILICAL WOUND INFECTION WHILE DOING OPEN LAPAROSCOPY

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A R T I C L E I N F O

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Traumatic instruments like Allis forceps, open laparoscopy, umbilical skin necrosis, and umbilical wound infection.

A B S T R A C T

Objective: To describe the technique of open laparoscopy to prevent umbilical skin necrosis or umbilical wound infection. **Methods**: From 12th June 2015 to 12th October 2015, skin of the umbilicus and skin around the umbilicus is held with traumatic instruments like Allis forceps for open laparoscopy while doing laparoscopic operations like laparoscopic appendectomy. But due to the umbilical skin necrosis encountered in the previous technique, from 13th October 2015, skin of the umbilicus and skin around the umbilicus is never held with traumatic instruments like Allis forceps for open laparoscopy while doing laparoscopic operations. **Results**: From 12th June 2015 to 12th October 2015, while skin of the umbilicusand skin around the umbilicus is held with traumatic instruments like Allis forceps for open laparoscopy, we frequently encountered umbilical skin necrosis and umbilical wound infection. But from 13th October 2015 to 18th December 2019, while skin of the umbilicus and skin around the umbilicus is not held with traumatic instruments like Allis forceps for open laparoscopy while doing laparoscopic operations, no patient had umbilical skin necrosis or umbilical wound infection. **Conclusion**: Hence the new technique of not holding skin of the umbilicus and skin around the umbilicus with traumatic instruments like Allis forceps for open laparoscopy while doing laparoscopic operations is extremely useful since it avoids the complications of umbilical skin necrosis and umbilical wound infection.

INTRODUCTION

In many studies of open laparoscopy umbilicus is grasped with Allis forceps or towel clip and upward and backward traction is applied. This maneuver everts the umbilicus as well as lifts the abdominal wall. But in our study skin of the umbilicus is never held with traumatic instruments like Allis forceps or towel clip.

MATERIALS AND METHODS

This study was conducted in the department of general surgery, Indira Gandhi Medical College and Research Institute, Puducherry. From 12th June 2015 to 12th October 2015 for a period of four months, open laparoscopy was done by holding skin of the umbilicus and skin around the umbilicus with traumatic instruments like Allis forceps for 8 laparoscopy operations which included 8 laparoscopic appendectomies. But from 13th October 2015 to 18th December 2019 for a period of four years and one month, open laparoscopy was done by a new technique by not holding skin of the umbilicus and skin around the umbilicus with traumatic instruments like Allis forceps for 102 laparoscopic operations which included 42 laparoscopic appendectomies, 28 laparoscopic cholecystectomies, 18 laparoscopic hernia repair (TAPP) and 14 diagnostic laparoscopic procedures.

RESULTS

From 12th June 2015 to 12th October 2015, while holding skin of the umbilicus with traumatic instruments like Allis forceps for open laparoscopy while doing laparoscopy operations which included 8 laparoscopic appendectomies we encountered umbilical skin necrosis or umbilical wound infection in six out of 8 patients. But from 13th October 2015 to 18th December 2019 for a period of four years and one month, while following the new technique of not holding skin of the umbilicus and skin around the umbilicus with traumatic instruments like Allis forceps for open laparoscopy while doing 102 laparoscopy operations which included 42 laparoscopic appendectomies, 28 laparoscopic cholecystectomies, 18 laparoscopic hernia repair (TAPP) and 14 diagnostic laparoscopic procedures, no patient had umbilical skin necrosis or umbilical wound infection.

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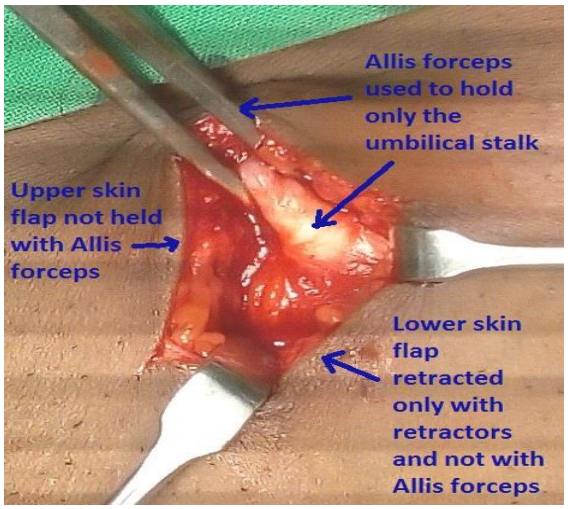

Fig 1 Skin of the umbilicus is not held with Allis forceps or towel clip. Skin of the upper and lower skin flaps is retracted only with retractors with and is not held Allis forceps.

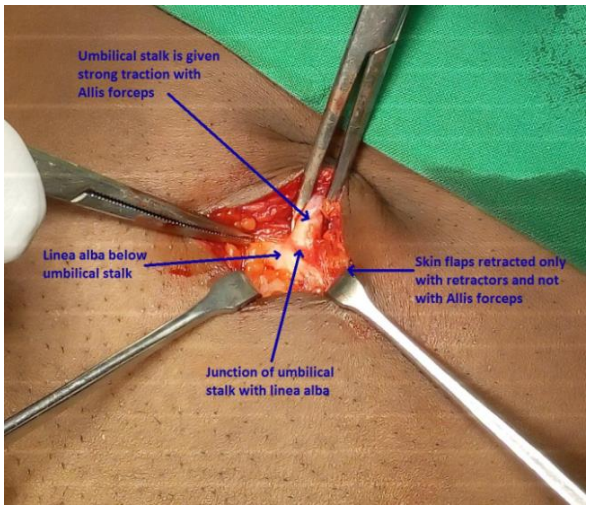

Fig 2 Umbilical stalk is given strong traction with Allis forceps to expose the junction of the umbilical stalk with the linea alba. Skin flaps are retracted only with retractors and not held with Allis forceps.

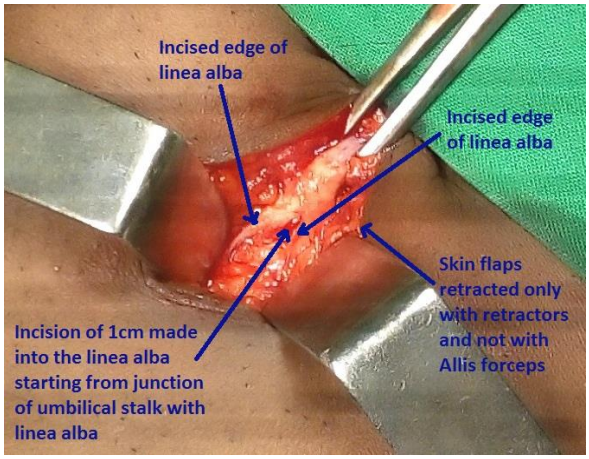

Fig 3 Incision is made starting at the junction of the umbilical stalk with the linea alba and extending below for1 cm into the line alba. Skin flaps are retracted only with retractors and not held with Allis forceps.

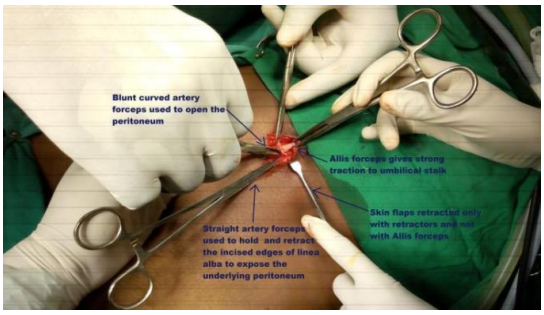

Fig 4 showing the use of retractors, Allis forceps, staight artery forceps and blunt curved artery forceps in our technique of open laparoscopy. Skin flaps are retracted only with retractors and not held with Allis forceps.

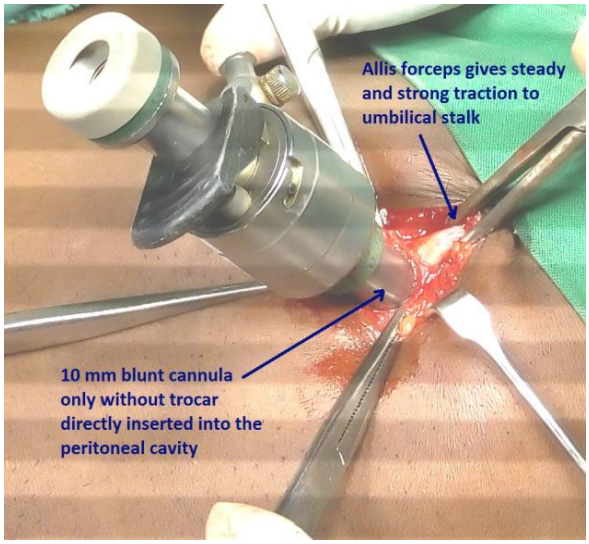

Fig 5 Abdominal wall is kept away from the underlying viscera by grasping the umbilical stalk withAllis forceps and only the10mm blunt cannula without sharp trocar is inserted into the peritoneal cavity under direct vision

DISCUSSION

The important features of our technique to prevent umbilical skin necrosis and umbilical wound infection are

1. Skin of the umbilicus is never held with traumatic instruments like All is forceps or towel clip (Fig 1).
2. Skin of the upper and lower skin flaps is retracted only with small right-angled retractors and is not held with Allis forceps (Fig 1). Allis forceps is used to only hold the umbilicalstalk (Fig 1). Umbilical stalk is a pearly white ligament like structure running from linea alba to the dermis of umbilical cicatrix (1) (Fig 2). Umbilical stalkis the embryological remnant of umbilical veins, arteries and urachus (1).
3. Since the skin of the umbilicus and skin around the umbilicus is never injured in our technique, none of the 102 patients who underwent open laparoscopy by our technique had umbilical skin necrosis or umbilical wound infection.

The special Precautions Taken In our Technique For Safe Entry Into The Peritoneal Cavity And To Avoid Injury To Intra Abdominal Organs, Viscera And Blood Vesselsare

1. Umbilical stalk is given strong upward and backward traction with All is forceps to expose the underlying linea alba (Fig 2).

2. The junction of the umbilical stalk with the linea alba(Fig 2) is the thinnest part of the abdomen and at this point peritoneum is fused with linea alba as a single layer(1).
3. Hence a vertical incision is made with15 number knife starting at the junction of the umbilical stalk with the linea alba and extending below for1cm into the linea alba. (Fig 3).
4. The peritoneum is opened with the help of blunt tipped medium sized curved artery forceps and not with the help of the knife orblade (Fig 4). Hence there is no risk ofinjury to the intra abdominal organs and viscera.
5. Now the10mm trocar is removed from its underlying cannula. Then only the blunt cannula is inserted into the peritoneal cavity under direct vision (Fig 5). Hence there is no risk of injury to the intra abdominal organs, viscera and blood vessels.
6. Since incision is made only atthe junction of the umbilical stalk with the linea alba where peritoneum is fused with linea alba as a single layer, peritoneumis opened only with the help of blunt medium sized curved artery forcepsand onlythe blunt cannula without the sharp trocar is inserted into the peritoneal cavity under direct vision, none of the 102 patients who underwent open laparoscopy by our technique had injury to the intra abdominal organs, viscera and blood vessels.

Discussion of how our technique differ from many other techniques of open laparoscopy is

1. Ina study of open laparoscopy conducted by Bathla V *et al* in August 2014, umbilical cicatrix is grasped with Beckhau's towel clip and upward and backward traction is applied. This maneuver everts the umbilicus as well as lifts the abdominal wall (1).
2. In the study of open laparoscopy conducted by Bathla V *et al* (2) in December 2014, umbilical cicatrix was held with traumatic instrument (towel clip) to evert the umbilicus and lift up the abdominal wall in 50 patients. In this study, 5 out of 50 patients had wound infection (2). Abdominal wall hemorrhage was seen in 1patient and gastrointestinal injurywas seen in 1patient.(2).
3. In the study of open laparoscopy conducted by Bathla V *et al* (3) in January 2016, umbilical cicatrix was held with traumatic instrument (towel clip) to evert the umbilicus and lift up the abdominal wall. In this study, 4 patients had port sitewound infection. Port site hematoma was seen in 1patient(3).
4. In another study of open laparoscopy conducted by Long JB, Giles DL, Cornella JL *et al*, the umbilicus was held and everted with 2 Allis forceps.51 patients (2.5 %) had umbilical infection, 1 had periumbilical hematoma.(4).
5. Patients with umbilical infection were sub classified based on the diagnosis of erythema, cellulitis, or an umbilical abscess requiring evacuation.8 patients (0.4%)had erythema, 36 patients (1.8 %) had cellulitis and 7 patients (0.3 %) had umbilical abscess requiring evacuation**.**(4).
6. From12th June 2015 to 12th October 2015, while holding skin of the umbilicus with traumatic instruments like Allis forceps for open laparoscopy we also encountered umbilical skin necrosis or umbilical wound infection in six out of 8 patients. But from 13th October 2015 to18th December 2019 for a period of four years and one month, while following the new technique of not holding skin of the umbilicusand skin around the umbilicus with traumatic instruments like Allis forceps, no patient had umbilical skin necrosis or umbilical wound infection.
7. In another study of open laparoscopy conducted by Sadhu S, Jahangir TA, Sarkar S, Dubey SK, Roy MK. the umbilical cicatrix is grasped at its pit by a towel clip and upward traction applied to evert the umbilicus. (5).
8. In the studyof open laparoscopy conducted by Sangrasi AK, Memon AI, Memon MM, Abbasi MR, Laghari AA, Qureshi JN(6) in Shenyang, umbilical cicatrix was held with traumatic instrument (towel clip) to lift the abdominal wall and to increase the distance between the abdominal wall and intra abdominal organs in1250 patients. In this study, port-site infection occurred in 6 (0.48%) cases and port-site hematoma in 4 (0.32%) cases. (6).
9. In another study of open laparoscopy conducted by Lal P, Singh L, Agarwal PN, Kant R, the umbilical scar was picked up by Allis forceps or towel clip at the highest point and retracted up to facilitate the lifting up of the abdominal wall. Forty nine patients (6.49%) had minor umbilical sepsis, 22 patients (2.91%) had periumbilical hematoma. (7).
10. In another study of open laparoscopy conducted by Lal P, Vindal A, Sharma R, Chander J, Ramteke VK Mayo towel clip was used instead of the Allis forceps for holding the cicatrix pillar. Port-site hernias were seen in 25 cases (0.4%) and wound infections in 56 cases (0.9%) (8).
11. In another study of open laparoscopy conducted by Yogendra D Shah, port site infection was seen in 4 (8%) cases. Port site infection was due to the larger primary port incision and more subcutaneous dissection. The port site hernia was seen in 1 patient (2%) and was due to dehiscence of rectus sheath after infection at the primary port site.(9).
12. In another study of open laparoscopy conducted by Jacobson *et al* in 22 patients, 2 patients (9.09%) had umbilical wound infection or discharge (10).
13. In another study of open laparoscopy conducted by Pen field AJ, certified gynecologists who had performed open laparoscopies encountered 18 instances of wound infection and 6 cases of bowel laceration (11).
14. In the study conducted by Sangrasi AK, Shaikh AR, Muneer A, umbilical stalk was held with towel clip in 223 patients subjected to open technique. In this study, port site umbilical wound infection was seen in 4 out of 223 patients (1.79 %) and port-site hematoma in1 out of 223 patients (0.45 %) (12).
15. But in our technique skin of the umbilicus is never held with traumatic instruments like Allis forceps or towel clip (Fig 1)

CONCLUSION

1. Hence the new technique of not holding skin of the umbilicusand skin around the umbilicus with traumatic instruments like Allis forceps or towel clip for open laparoscopy while doing laparoscopic operations is

extremely useful since it avoids the complications of umbilical skin necrosis and umbilical wound infection.

2. Since incision is made only atthe junction of the umbilical stalk with the linea alba where peritoneum is fused with linea alba as a single layer, peritoneum is opened only withthe help of blunt medium sized curved artery forceps and only the blunt cannula without the sharp trocar is inserted into the peritoneal cavity under direct vision, none of the 102 patients who underwent open laparoscopy by our technique had injury to the intra abdominal organs, viscera and blood vessels.

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References

1. Bathla V, VasavadaH, SorathiyaP Direct Peritoneal Access - A Newer and Safer Method for Inserting Trochar in Peritoneal Cavity *International Journal of Scientific Research,* Vol : 3, Issue : 8 August 2014
2. Bathla V, Thekdi PI, VasavadaH, Majmudar S, Koradia P Close Versus Modified Open Technique for Trocar Insertion in Laparoscopic Surgery International Journal of Scientific Research, Vol : 3, Issue : 12 December 2014
3. Bathla V, Thekdi PI, Koradia P, Jhala D, Gadhvi U. Comparative study of modified open technique and closed technique for primary trocar insertion in laparoscopic surgery. International Journal of Research in Medical Sciences. 2016 *Jan; 4(1):160-164***.**
4. Long JB, Giles DL, Cornella JL, *et al*. Open laparoscopic access technique: review of 2010 patients. JSLS. 2008;12:372–375
5. Sadhu S, Jahangir TA, Sarkar S, Dubey SK, Roy MK. Open port placement through the umbilical cicatrix. Indian Journal of Surgery. 2009 Oct 1;71(5):273-5
6. Sangrasi AK, Memon AI, Memon MM, Abbasi MR, Laghari AA, Qureshi JN. A safe quick technique for placement of the first access port for creation of pneumoperitoneum. JSLS: Journal of the Society of Laparoendoscopic Surgeons. 2011 Oct; 15(4):504.
7. Lal P, Singh L, Agarwal PN, Kant R. Open port placement of the first laparoscopic port: a safe technique. JSLS: Journal of the Society of Laparoendoscopic Surgeons. 2004 Oct;8(4):364
8. Lal P, Vindal A, Sharma R, Chander J, Ramteke VK. Safety of open technique for first-trocar placement in laparoscopic surgery: a series of 6,000 cases. Surgical endoscopy. 2012 Jan 1; 26(1):182-8**.**
9. Yogendra D Shah. "Comparison of open & close techniques of trocar insertion". Journal of Evolution of Medical and Dental Sciences 2013; Vol2, Issue 30, July 29; Page: 5533-5539.
10. Jacobson, MT, Osias, J, Bizhang, R, Tsang, M, Lata, S, Helmy, M, Nezhat, C, *et al*. The direct trocar technique: an alternative approach to abdominal entry for laparoscopy. JSLS2002 ;Apr-Jun; 6(2): 169–174
11. Penfield AJ. How to prevent complications of open laparos-copy. J Reprod Med. 1985; 30:660-66310.
12. Sangrasi AK, Shaikh AR, Muneer A. Open versus close pneumoperitoneum: A pursuit for safer technique. Pak J Med Sci 2011;2 7(3):523-527

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