Research Article

Management of duodenal ulcer perforation by right mini - subscostal incision: a new surgical approach

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Abstract

A right minisubcostal incision was used in 50 cases of perforated duodenal ulcer. The exposure was excellent, closure of the perforation, aspiration (suction) of peritoneal fluid with peritoneal lavage and drainage of peritoneal cavity was possible and done easily through right mini subcostal incision. This can be done with little trauma and minimal morbidity. Excellent outcome was noted in selected group of patients.

Keywords: Duodenum, Duodenal ulcer perforation, Minisubcostal incision.

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INTRODUCTION

In the modern era of widespread use of effective antiulcer drugs like H2 receptor antagonists and proton-pump inhibitors, the incidence of elective surgery of uncomplicated duodenal ulcer has declined significantly, as has the rate of complications. However, surgery remains the only modality of treatment of perforated duodenal ulcer.[1] Traditionally, the upper right paramedian incision has been used in cases of perforated duodenal ulcer, which are often associated with difficulties and complications.[2] To lessen the intra and post operative discomfort a small right subcostal incision was used which was found to be very effective.

MATERIALS AND METHODS

This study includes 50 cases of perforated duodenal ulcer admitted at our institutes. Closure of perforation and peritoneal cavity drainage was done through a small right subcostal incision. The cases were diagnosed clinically and confirmed radiologically.

INCLUSION CRITERIA

The likely diagnosis of duodenal perforation was done by the typical history given by the patient, like history of previous duodenal ulcer, i.e. epigastric pain and burning, history of pain aggravating on empty stomach, relieved after food intake or taking antacids, later presenting with sudden onset of sharp abdominal pain in epigastrium, later on the patients presenting with features of shock with acute pain in abdomen, abdominal guarding and rigidity, the erect abdominal X- ray showing significant gas under diaphragm.[3,4] Many of these patients had history of drug consumption (NSAID's) These patient were strongly suspected for duodenal ulcer perforation and were included in our study. Most of the patients were diagnosed cases of duodenal ulcer on previous upper endoscopic examination and had received treatment for same in the form of proton pump inhibitors.

EXCLUSION CRITERIA

While the patients having history of right iliac fossa pain and later presenting with diffuse abdominal pain (suggestive of appendicular perforation) , patients with history of fever for many days before onset of pain (suggestive of enteric fever), patients complaining of abdominal pain followed by trauma (suggestive of small bowel perforation), old age patients with long standing pain and history of altered bowel habits (suggestive of malignancy), and patient who were chronic alcoholic in whom preoperative diagnosis usually cannot be confirmed were excluded from the study.[3,4] After adequate rescucitation, adequate hydration and suitable

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antibiotic cover preoparative preparation was done. Necessary investigations like complete blood count, renal function test, serum electrolytes, serum amylase were done and with proper written informed consent patients were taken for procedure under general anesthesia and operated. Written informed consent regarding this new minisubcostal incision for patients surgery, patient's willingness to participate in the study for this newer approach was taken. Patients were explained in advance regarding the possible extension of the minisubcostal incision or rarely a need of newer incision if required. A transverse incision of approximately 2 inches was taken in the right subcostal region, passing overlying the lateral border of the rectus muscle. The oblique muscles were split in the direction of their fibers. If necessary the rectus muscle was retracted medially and the peritoneum was opened. In all cases, except one, the incision was directly over the site of perforation. There was no necessasity to handle or retract the small bowel loops. After draining the peritoneal cavity and collecting the fluid for microbiological examination, the perforation was closed using interrupted suture of 2-0 silk as per the size of perforation, then it is overlaid and reinforced by a well vascularised omental patch. Definitive surgery was not done. A definitive surgery for peptic ulcer is not considered now a day's probably because of easy availability of Proton Pump Inhibitor's (injectables and oral preparations), and increased morbidity and mortality with definitive operations in emergency settings.[5, 6] Tilting the table with head low position facilitated drainage of fluid collected in the pelvis and paracolic gutters, with good retraction both sub diaphragmatic spaces were approached for suction and lavage. The abdomen was closed in layers leaving a sub hepatic drain and right lower abdominal pelvic drain under finger guidance.

Figure 1: Minisubcostal Incision On Right Side

Figure 2: Muscle Split

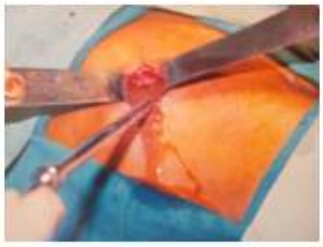

Figure 3: Peritoneal Fluid Drained And Sucked Out

Figure 4: Closure Of Perforation

Figure 5: Omental Patch

Figure 6: Right Subhepatic DrainKept And Closure Done

Figure 7: Postoperative scar

OBSERVATION AND ANALYSIS

Figure 1: Age distribution

Age group	No. of Cases
21-30	12
31-40	13
41-50	7
51-60	10
61-70	**8**

In our study maximum no. of cases were from age group 21 to 40 years.

Table 2: Sex distribution

	No. of Cases
Male	34
Female	16

There is preponderance of duodenal perforation in male patients.

Table 3: Operative time

Serial no. of cases	Duration (minutes) average
1-10	60
11-20	54
21-30	50
31-40	50
41-50	54
Average duration	**53.6 min.**

Average operative time in our study was similar to other standard existing studies using median and paramedian incision.[7]

Figure 4: Duration of hospital stay

Serial no. of cases	Duration (days) average
1-10	5.6
11-20	5.8
21-30	4.9
31-40	5.3
41-50	4.5
Average duration	**5.2**

Average duration of hospital stay was 5.2 days.

Table 5: Post operative Complication

	No. of Cases
Wound infection	2
Burst abdomen	0
Intra abdominal abscess	0
Basal pneumonitis oratelectasis	0
Incisional hernia	0
Adhesive obstruction	0
Hypertrophied or unacceptable scar/ keloid	**0**

In our study apart from 2 cases of wound infection (probably because of associated co-morbidities), there were no other complication, like burst abdomen, intra abdominal abscess, incisional hernia or late post operative obstruction due to adhesions.

Table 6: Pain assessment (after 48-hrs)

No pain	Minimal pain	Significant pain	Severe pain
0	**45**	**5**	**0**

Pain assessment was done using visual analogue scale [8], immediately after surgery then at 24 hr and 48 hr after surgery. Because of small size of incision and muscle splitting incision pain observed was minimal in our study group.

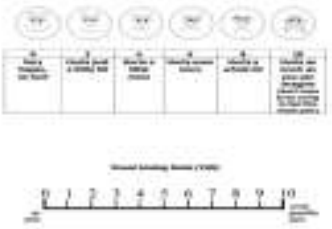

Table 7: Scarring Cosmesis was assessed using Vancouver scar scale scoring system [9], repeatedly on follow up examination and it is found to be very cosmetic and satisfying to the patients

Points	Vascularity	Pigmentation	Pliability	Height in mm
0	Normal	Normal	Normal	Normal (flat)
1	Pink	Hypopigmentation	Supple	0 – 2
2	Red	Hyperpigmentation	Yielding	2 – 5
3	Purple	-	Firm	-
4	-	-	Banding	-
5	-	-	**Contracture**	-

Total score= 13, The average score for our study group was = 4

Effect on pulmonary function

It has been studied that pulmonary functions are significantly affected after open abdominal surgery[10]. When the same are assessed in our study group, the pulmonary function tests and arterial blood gas analysis results were slightly reduced, as compared to the standard study group. (The demographic data closely resembles to our study group.)

Parameter	Results in our study group
FVC (L)	2.1
FEV1(L)	1.7
PEF(L/S)	5.2
FEF25%-75%(L/S)	2.7
FEV1/FVC (%)	**80.5**

These results found to be significantly less affected when compared with similar standard study.[10]

DISCUSSION

Conventionally surgical management of duodenal ulcer perforation is done through a right upper paramedian incision, an incision which is prone to a number of complications like more pain at suture line, wound infection, burst abdomen, and incisional hernia etc.[6, 11,12.] The right mini subcostal incision offers many advantages over the conventional paramedian incision.

a. The incision is small, muscle splitting; hence wound healing is better with almost no chances of incisional hernia or burst abdomen. Rectus muscle is not incised, only retracted medially in this newer approach which definitely helps to maintain contour and abdominal tone later on in these patients.
b. The incision is situated almost exact over the perforated viscous, hence handling of the other loops of bowel and associated ileus is not noted. Since other loops are not handled, incidences of post operative adhesions are also less.
c. The post operative period is much more comfortable to the patient. Post operative pain and morbidity noted is extremely less.
d. Decreased operative time and period of anesthesia was noted in this newer approach.
e. Though general anesthesia was used in all the cases in present study, however, it may be done comfortably under local anesthesia with sedatives or regional (spinal/epidural) anesthesia in high risk cases.

The only disadvantage of this incision is that when diagnosis is found to be wrong(perforation at other site), this incision needs to be extended to transverse muscle cutting bigger incision or separate right paramedian / median incision for adequate exposure as per the findings and need, which can be readily done.

CONCLUSION

Right mini subcostal incision approach for duodenal ulcer perforation is having a small incision about 1.5 to 2 inches in length and it is muscle splitting. Through this incision fair degree of location of perforation site is obtained and it is technically easy to close the perforation by direct visualization of perforation site. Even adequate peritoneal lavage can be given and peritoneal drains also can be kept. The chest complications like basal pneumonias, basal atelectasis with pleural effusions have not been noted in any patient operated by this new approach of right minisubcostal incision. Patient's ventilation and good tidal capacity of lungs noted in postoperative period was good enough to prevent chest complications. Patients were ambulatory on 2nd postoperative period and almost all were discharged on 5th postoperative day with oral proton pump inhibitor's and antibiotics. No patient needed abdominal support or binder to support the suture line as it was a small upper subcostal transverse incision. The post operative pain observed is less; also there are fewer chances of wound infection and wound dehiscence. All patients were noted to have a very small, well healed, cosmetically much better scar in the late follow up period. Thus surgical management of duodenal ulcer perforation by right mini sub costal incision approach seems to be superior and beneficial. It offers minimum operative trauma and less morbidity to the patient. This newer approach could become an alternative for laparoscopic management of duodenal ulcer perforation (if facilities are not available or patient is not fit for laparoscopic surgery) due to its better outcomes and results than conventional laparotomy.

REFERENCES

1. Hennessy E. Perforated peptic ulcer: Mortality and Morbidity in 603 cases. Aust Nz.J surg 1969, 38:243
2. Fong I.W. septic complication of peptic ulcer: Con. J. Surg. 1983,26:370
3. Bailey and loves short practice of surgery, 26th edition, 1054-60,
4. David M.M., Seth B K., peptic ulcer, Sabiston , textbook of Surgery, the biological basics of modern surgical practice, 19th edition, Elsevier saunders, 1191-1201.
5. Daniel T. Dempsey, *et al* , Schwartz, principal of surgery, 9th edition , page no. 921
6. David I. S., Micheal J. Zinner, stomach and duodenum: operative procedures; Maingot's abdominal operations, , Mc Graw Hill , 12th edition, 509.
7. Vyavahare S R and Bhate M K: A Follow up study of 100 cases of peptic perforation, Indian J Surg 1977:39:349-352.
8. P. Dawes and I. Haslock.; Visual Analogue Scales, Ann Rheum Dis. Aug 1982; 41(4): 434-435.

9. Baryza MJ, Baryza GA. The Vancouver scar scale: an administration tool and its interrater reliability. J. burn care rahbilitation. 1995 sep-oct;16(5):535-8
10. Abdul Raoof Omar SIddiqui *et al*,: comparative study of preoperative and postoperative pulmonary function in open abdominal surgeries, international journal of biomedical research, 2014.05.12
11. Angelescu N. *et al*. Perforated and heamorrhagic duodenal ulcer; The problems of surgical procedure and technique. Rew chir(chir)1989 Mar. April 38(2) 121-5.
12. Gilleam A D, Speake WJ, Lobo DN, *et al*: current practice of emergency vagotomy and H.pylori eradication for complicated peptic ulcer in the UK, Brit J Surg 90:88, 2003.

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