Penetrating colorectal injuries.

-Fadel Habeeb Taher(F.R.C.S Ed)Department of surgery college of medicine Al-Qadisiah university,Iraq.

الملخص

ان علاج إصابات المعي الغليض قد تطورت خلال المائة العام الماضية حيث كانت عملية تفويه المعي الغليظ تعتبر الحل الوحيد المتوفر آنذاك ، أما ألان فهناك تغير كبير في التعامل مع هذه الحالات وبطريقة حديثة وهي الخياطة الأولية للجروح .الهدف من البحث هو التأكد من كفاءة الخياطة الأولية مقارنة مع عملية تفويه المعي الغليظ .هذه دراسة استطلاعية شملت (22) مصاب أجريت لهم عملية الخياطة الأولية لجروح المعي الغليظ والمستقيم بينما (64) مريضا أجريت لهم عملية تفويه المعي الغليظ في مستشفى اليرموك التعليمي في الفترة من 2005 - 2006 .
نتائج البحث :كانت نسبة الذكور:الإناث 1:4 وكان معدل العمر يتراوح بين 20_40 عاما.
نستنتج ان عملية الخياطه الاوليه لجروح المعي الغليظ تعتبر مضمونه وذات تأثير ايجابي باالمقارنه مع من عملية تفويه المعي الغليظ .

Abstract

Background:The treatment of colorectal injury has fluctuated over the past 100 years ,colostomy was the only option available currently a new approach through primary repair of colorectal injuries .
Aims:to ascertain the efficiency of primary colonic repair in comparison with colostomy in colorectal injuries .
Patients and Methods :A prospective study was conducted in Al-Yarmouk Teaching Hospital on 86 patients with colorectal injuries who have undergone laparotomy from Jan 2005 to Jan 2006
Twenty two patient were selected forad primary repair and 64 patients selected colostomy depending on Flints' grade which display severity of colonic injury .
Results : male to female ratio was 4:1 and peak age was 20-40 years 22 patients were treated by primary repair this including simple repair of perforation primary repair in 15 patients (17,44%)and resection and anastomosis in 7 patients (8.14%)while colostomy group included 23 patients were treated by primary repair with proximal colostomy ,37 patients were treated by exteriorization of the injured part,and 4 patients only underwent Hartmanns' colostomy.
Conclusions :primary repair of colorectal injuries is safe ,effective and much better than colostomy in term of morbidity, ,mortality and stay in hospital.

Introduction

The approach to colonic injuries was evolved from mandatory colostomy for every colonic injury to the current trends of primary repair which is safe ,cheaper specially when taking into accounts the complication of colostomy closure ,short hospital stay and less psychological trauma [1].

Patient at risk of suture leak are those in whome dignosis has been delayed significantly (24hrs.)and those who are hypovolemic shock[2].

Diagnosis of colonic injury is made during laparotomy[3],rectal injury are usually diagnosed preoperative with high index suspicion based on the wound missile trajectory 3 ,and digital rectal examination ,supported by proctoscopic /sigmoidoscopic examination [4].

Available diagnostic modalities are not highly reliable in detecting isolated colonic injury Ross-1992 [5].

Wounds at the back and buttock are suggestive of rectal injury Burch et-al 1999 [6].

Patients and Methods

This is a prospective study conducted in Al-Yarmouk Teaching hospital on 86 patients with colorectal injury who had undergone surgical treatment from a total 232 cases of penetrating abdominal trauma,during a period of one year from Jan 2005-Jan 2006.

Standard resuscitation measures were perform on all patients according to Advance Trauma Life Support (ATLS) protocol .Nasogastric and urninary.Catheters were placed .Depending on the response to resuscitation ,patient were evaluated with indicated radiographic ,peritoneal tapping ,and apdominal ultrasonic study.The operative time varied from(1hr-5hrs),and majority of colostomies were closed within 3 monthes.The patient were divided into two groups ,primary repair group and colostomy group depending on grading of severity of injury ,degree of contamination and shock status with duration between injury and operation.All patients were explored by an extended midline incision and closed by one layer continuous monofilament nylon suture and they reseved antibiotic cefotaxin 1gm-8hrs.The technique of primary repair included excision of devitalized tissue and suturing by single layer submucosal ,monofilament suture .

While colostomy were done as follows :

1.exteriorization of injured part (37 patient)

2.primary closure and defunctioning colostomy(23 patients)

3.Hartmanns' colostomy (4 patients)

Results

Of the 86 patients,22 patients were selected for primary repair of colonic injury (25.58%)while the remaining64 patients were treated by colostomy (74.42%) Age range from 11 to 60 years with peak 20-40 years. for both sexes.(figure 1) male to female ratio was 4:1(figure 2).

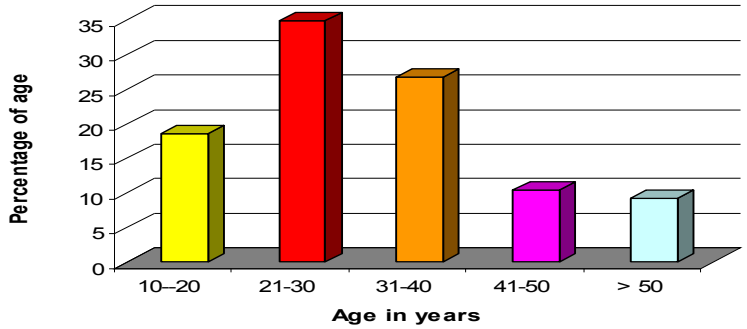

Figure (1): The distribution of cases in respect to age

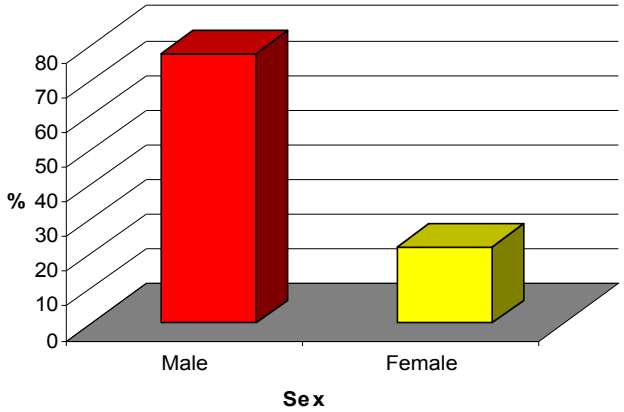

Figure (2): The distribution of cases in respect to sex

Primary repair included 15 patients treated by simple suturing of perforation ,and 7 patients treated by resection and anastomosis Colostomy group included 23 patients were treated by primary repair with proximal colostomy , 37 patients were treated by exteriorization of the injured part and 4 patients only underwent Hartmnns' colostomy (table 1).Average time from arrival at the accident room to operation was 3 hrs. (table 2).and 53 patients (61.62%)presented with shock
The transverse colon was the most common injured part.(44.19%)and the majority of injuries were caused by bullets and shells(figure 3)
Flint's grading system of penetrating colonic injury was applied on all 86 cases as follow:
18 patients (20.93%)were grade 1 injury and were treated by primary repair.14 patients(16.28%)were grade II ,54 patients (62.79%)were grade III injury,(figure4)
severe peritoneal faecal contamination were found in 51 patients(59.30%) and all patients were received blood transfusion .

Isolated colonic injuries was found in only 8 patients (9.30%)small intestinal injuries were the most common associated intraabdominal

organ injuries (table3).The extremities were the most common extraabdominal organ injured 17 patients(19.76%).The duration of hospital stay was as follow 70 patients (81.40%) less than 2 weeks ,12 patients(13.95%)from 2-3 weeks ,4 patients (4.65%)for more than 3 weeks .(table).The average interval from creation to closure stoma was 90 days..

10 patients of colostomy groups developed complication (table 4).

Complication in primary repair group were 1 wound infection and one incisional hernia while in colostomy group 2 intra peritoneal abscess ,7 wound infection and 4 incisional hernia (table4).

Mortality was in primary repair group was only one .while colostomy group 12 died out of 64 patients (15.1%).

Table - 1: Modes of Colonic Injury Management

Mode	No.	%
Exteriorization of the injured part	37	43.02
Repair and proximal colostomy	23	26.75
Primary repair	15	17.44
Right hemicolectomy	7	8.14
Hartmann's procedure	4	4.65
Total	86	100

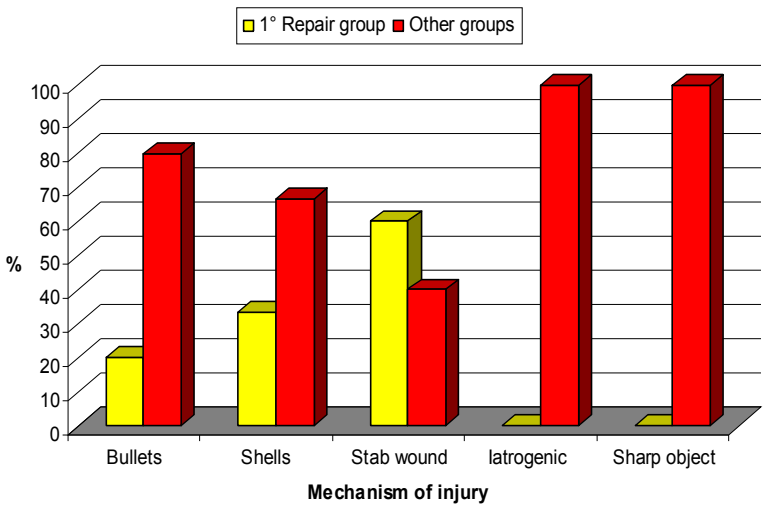

Figure (3)

Table-2: Time between injury and surgery

Time in hours	1° repair group	Other groups	Total no.

	No.	%	No.	%	
< 3	19	86.36	42	65.63	61
3 – 8	3	13.64	14	21.87	17
8 – 24	--	--	6	9.30	6
> 24	--	--	2	3.12	2

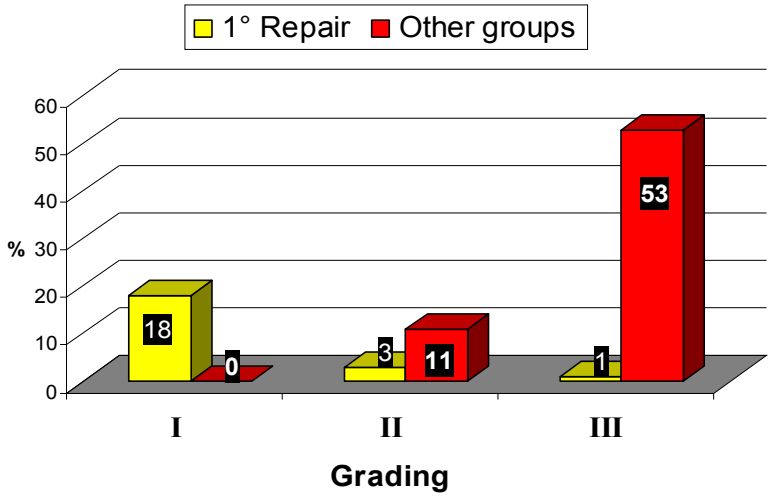

Figure (4): Grading of colonic injury : Flint's Grading

Table -3: Associated Intra-abdominal Injuries

Organs	No.	%
Small bowel	38	44.18
Mesentery	16	18.60
Liver	11	12.79
Spleen	10	12.79
Stomach	10	11.62
Major vessels	6	6.97
Diaphragm	5	5.81

Table 4:Complications

complications	Primary repair	colostomy
Wound infection	1	7
Intraabdominal abscess	0	2
Dehiscence	1	3
Incisional hernia	1	4
Phlebitis	0	1
Faecal fistula	0	1

Discussion

For purpose of comparison,we divided our patients into two groups, primary repair group and colostomy group .primary repair for traumatic colorectal injury was reported as early as 1951 by Woodhall and Oschner [1].

In our study,the most common site of colonic injuries were in transverse colon (44.19%) similar to Abdul-R's study [2] .

exteriorized repair was not applied in our study but it was used in some centers Nallathambi et-al study 1984[3].Severe faecal contamination is the strongest contraindication to primary repair Ross S.E. et-al 1992 [5].Patient with primary repair had lower rate of hospital stay than colostomy group .In primary repair majority had hospital stay less than two weeks while in colostomy group the average hospital stay was more than two weeks this is comperative to Abdul-R.study [2].Primary repair technique consists of excision of devitalized edges and extramucosal continous suture Hussain et al-2003 [7].while in our study we did interrupted sutures. The age is not a major risk factor in determining the type of repair and outcome,but mortality increase in elderly patients Satish et-al" [8].The commonest associated intraabdominal organs injury in our study was small intestine (44.18%)followed by mesentery (18.60%)and liver (12.79%) and these results are comparative with Huange-cj et-al 1990[9].Severe peritoneal contamination were found in our study (59.30%)which is comparative with Inderbitzi-R. et-al study 1990[10].

In our study ,we did right hemicolectomy and ileotransverse anastomosis for 7-patients successfully, Khayat et al(1994) [11] proved that right hemicoloctomy with primary anastomosis is safe procedure.Exteriorization of the injured part of the colon were done in 37 patients(43.02%)while in Abdul-R's study it was only (15%) [2] .Hartmanns' colostomy carried out in 4 patients (4.65%) all of them had rectal injuries.primary repair and proximal colostomy were carried out in (26.73%),we still have high rate of colostomy .There is a wide variation in the recorded morbidity of stoma closure .Parks and Hastings [12] found 36 % complication rate and no death in a review of 83 patients subjected to colostomy closure while in our study complication rate was (10.93%).In contrast other reviews addressing colostomy closure after colon injury have found a much lower morbidity rate Thal ER et –al 1980 [14].

The over all mortality was (15.12%),in other study Tanonie's study - 2003 [4] the mortality was 6% while in Bakers' –study 1990 [13]was(9%).

In primary repair there was 1 septic related complication (4.54%)while in colostomy group 9 septic related complication (14.06%).The mortality in primary repair group was one dead (4.54%)while in colostomy group 12 patients were died (18.75%).

This is comparative to other study[13] Baker et –al 1990.

In conclusion

1.Primary repair is preferable if condition for its performance are satisfied

2.Shock and gross contamination are the strongest contraindication for primary repair.

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