

## Colostomy closure in post Conflict Iraq

DOI: <https://doi.org/10.32007/med.1936/jfacmedbagdad.v60i3.3>



This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/).

**Najim A.I. Al-Khaldy\*** FIBMS, CABS  
**Ali S. Al-Hashimi\*** MRCS, EFSO  
**Mardukh S. Abd Ali\*\*** FIBMS

### Abstract:

**Background:** Colostomy minimizes the risk of leakage at expense of requiring a second operation. In Iraq, published on colostomy closure in penetrating abdominal wall injuries is scarce.

**Objective:** to Study the prognosis of colostomy closure in post-conflict patients in Iraq.

**Method:** This is a retrospective study of 52 patients subjected to colostomy closure, recruited for the period 2008 to 2009 from Al-Yarmouk Teaching Hospital and Children Central Teaching Hospital. Demographic data and information about colostomy (type, methods of preparation ... etc.) were studied.

**Results:** Trauma was noticed in 57.7% patients. Transverse colon was the commonest site of injuries. The complications were wound infection (19.2%), fecal fistula (3.8%), anastomotic leak (1.9%) and abdominal abscess (1.9%). A significant high complication rate was associated with conventional method of preparation, and double layer anastomosis ( $p = 0.004$  and  $0.003$ , respectively).

**Conclusion:** the finding were comparable with other centers in the world.

**Keywords:** colostomy closure, trauma, complication, post-conflict Iraq.

### Introduction:

Colostomy has its origin Since (1798).<sup>1</sup> It was stated that the greatest single factor in the improved results is the exteriorization of colon injuries.<sup>2</sup> In the surgical management of colonic injuries there are three therapeutic strategies; primary repair, colostomy, exteriorization and repair. The last two are to minimize the risk of leakage at expense of requiring a second operation. For large intestine injuries, large scale outcome data was available after World War I and high mortality rate was reported.<sup>3</sup> In world war II, surgeons either performed exteriorization or proximal stoma with an elective closure at a later date.<sup>4</sup> Through advancements in perioperative care and surgical technique, studies are focusing on reducing the risk of anastomotic complications. In Iraq, publishing on colostomy was mainly concerned with imperforated anus, Hirschsprung's disease<sup>5-8</sup> and (congenital anomalies). In spite of widespread violence in Iraq<sup>9</sup> publishing on colostomy closure in penetrating abdominal wall injuries is scarce e.g. in 1990s.<sup>10</sup> this study was carried out to Study the prognosis of colostomy in post-conflict Iraq.

### Patients and methods:

A total of 52 patients subjected to colostomy closure. They were recruited for the period Jan. 2008 to Dec. 2009, from Al-Yarmouk Teaching Hospital and Child's Central Teaching Hospital in Baghdad. The requested data were age, age, reason for performing colostomy, site of trauma if present, type of colostomy and method of preparation of large intestine (conventional method or total intestine irrigation)<sup>9</sup>. test for difference between two proportions was carried out to examine the effect of preparation of large bowel, time with colostomy until closure and surgical technique (single or double anastomosis) and, complication of the closure of colostomy. Student's t test was done to examine the effect of preparation methods on hospital stay after colostomy closure.  $P < 0.05$  was considered as significant.

### Results:

Fifty two patients with colostomy were included in this study. Their age ranged 1 to 65 years old, and male to female ratio was 3.7:1. Reasons for colostomy are shown in Table 1. Trauma was noticed in 30 (57.7%) patients. Bullet injury was a cause of colostomy in 26 (50.0%) patients and stab wound was the cause in 4 (7.7%) patients. Congenital anomalies were the cause in 10 (19.2%) patients. Imperforated anus and Hirschsprung's disease were reported in 5 (9.6%) patients for each.

\*Alelwiya Maternity Hospital, Baghdad, Iraq  
 Correspondence Email: [najimissa@yahoo.com](mailto:najimissa@yahoo.com)

\*\*Al-Amiryah general Hospital, Al-Anbar, Iraq  
 Email: [shamsyali@yahoo.com](mailto:shamsyali@yahoo.com)  
 Email: [drwardukh@yahoo.com](mailto:drwardukh@yahoo.com)

**Table1: Distribution of causes of colostomy in the studied sample**

Reason for colostomy	No.	%
Trauma		
Bullet injury	26	50.0
Stab wound	4	7.7
Ca colon	6	11.6
volvulus	5	9.6
Anomaly		
Imperforated anus	5	9.6
Hirschsprung's disease	5	9.6
Foreign body	1	1.9
Total	52	100.0

Table 2 shows the site distribution of injury. The transverse colon was the site in 16 (30.8%) patients, sigmoid colon was the site in 13 (25.0%), rectum was in 10 (19.3%), left colon in 7 (1.5%) and anus in 6 (11.6%) patients.

**Table 2: Site distribution of injury**

Site	No.	%
Transverse colon	16	30.8
Sigmoid colon	13	25.0
Rectum	10	19.3
Left colon	7	13.5
Anus	6	11.6
Total	52	100.0

The complications of closure of colostomy were noticed in 14 (26.9%) patients. The distribution of complications of colostomy closure are shown in Table 3. Wound infection was observed in 10 (19.2%) patients, fecal fistula was in 2 (3.8%) patients, anastomotic leak in 1 (1.9%) patients and abdominal wall abscess was observed in 1 (1.9%) patients.

**Table 3: Complication after closure of colostomy**

Complication	No.	%
Wound infection	10	19.2
Fecal fistula	2	3.8
Anastomotic leak	1	1.9
Abdominal wall abscess	1	1.9
Total	14	16.9

Conventional method in preparation for closure of colostomy was used in 32 (61.5%) and total bowel irrigation was used in 20 (38.5%) patients (Table 4). Eleven (34%) patients of those prepared by conventional method and 3 (27%) patients of those prepared by total bowel irrigation developed complications. There was significant differences in proportions of complications between patients prepared by conventional and total irrigation ( $p = 0.004$ ). In 20 (38.5%) a single layer anastomosis was used, and in the rest 32 (61.5%) a double anastomosis was carried out. Four (20.0%) patients out of those with single layer anastomosis and 10 (31.2%) patients of those with double anastomosis developed complications. A significant difference was noticed in the proportions of complications between patients with single and double layers anastomosis ( $p = 0.003$ ) (Table 4). Duration of colostomy before closure of < 3 months was in 21 (40.4%) patients and the longer duration of 3 to 12 months in the rest 31 (59.6%) patients. Eight

(38.1%) of those with < 3 months duration of colostomy and 6 (19.3%) of those with longer duration developed complications. There was a significant difference between proportion of complications between patients with different durations of colostomies ( $p = 0.002$ ) (Table 4). The hospital stay after closure of colostomy was  $7.1 \pm 1.3$  days. Patients prepared by conventional method stay in hospital was  $8.3 \pm 1.3$  days, and those prepared by total bowel irrigation stayed in hospital for  $5.3 \pm 2.2$  days. A significant difference was noticed in hospital stay between patients managed by conventional and total bowel irrigation ( $p = 0.002$ ) (Table 5).

**Table4: Distribution of factors affecting complication of closure of colostomy**

Variable	No	Complications		P value
		No.	%	
<b>Method of preparation</b>				
Conventional method	32	11	34	0.004
Total bowel irrigation	20	3	27	
<b>Surgical technique</b>				
Single layer	20	4	20	0.003
Double layer	32	10	31.2	
<b>Duration of colostomy (months)</b>				
< 3	21	8	38.1	0.002
2-12	31	6	19.4	

**Table5: Hospital stay after closure of colostomy**

Method of preparation	No.	complication	
		mean	SD
Conventional method	32	8.3	1.3
Total bowel irrigation	20	5.3	1.2
Total	52	7.1	1.8

$t = 4.6, d.f = 50, p = 0.0002$

### Discussion:

Theirs study showed a male predominance (78.8%). A male predominance reported in previous studies in pediatric groups<sup>7, 8</sup> or adults<sup>6</sup>. In this study the rate of congenital anomalies (imperforated anus and Hirschsprung's disease) was 19.2%. It is much lower than that reported previously in Baghdad, Iraq (92% and 98%).<sup>7,8</sup> The difference might be explained by the fact that the mentioned studies were carried out in specialized center for children. The finding that 50% of colostomies was due to bullet injury is higher than that reported by North of Baghdad (Al-Kadhmia) (38.7%)<sup>6</sup>. The difference might be explained by the differences in the security situation between both areas in Baghdad. Rate of stab wound in this study was 7.7%. It is similar to that reported in Baghdad previously (7%)<sup>6</sup>. This study revealed that rectal foreign body was 1.9% of causes of colostomies. Case reports on rectal foreign bodies are scarcely published.<sup>12, 13</sup> Research on adolescents showed that such cases might be related to sexual abuse. To the best of our knowledge, no case report on rectal foreign body was published in Iraq. Transverse and sigmoid colon were the site for the majority of colonic injuries (30.8% and 25.0%, respectively). It is similar to that reported in Baghdad recently (26.7% and 17.3%).<sup>6</sup> The rate of complications was (26.9%) It is higher than that

reported previously in Ana General hospital (22%)<sup>14</sup> in 1995-2002. The difference might be attributed to the increase of violence in Iraq during peaceful time. Publishing documented of the deterioration of health system in Iraq<sup>15</sup>. The observed rate (26.9%) is similar to that reported previously in a military hospital in Iraq in 1990s (26.7%).<sup>10</sup> The reported figure (26.7%) reflected war surgery at time of sanctions i.e. post 1991 Gulf war, in Iraq. The similarity might be explained by the fact that observed figure (26.9%) was reflecting trauma during widespread violence. The observed figure (26.9%) and the reported figures (22%<sup>15</sup> and 26.7%<sup>10</sup>) are similar to figure reported in Austria (22%)<sup>16</sup>. In the line of that reported in other studies<sup>17</sup>, wound infection was the most common complication (19.2%). Colostomy closure following traumatic colon injuries had a broad range of published morbidity rates 5– 55%.<sup>18</sup> The study revealed that complications of closure of colostomy were significantly higher in using conventional preparation ( $p = 0.004$ ), double layer surgical technique ( $p = 0.003$ ) and the short duration of colostomy before closure ( $p = 0.002$ ). In the 2nd half of 20th century, management of penetrating colon injuries was changed. Mandatory colostomy in World War II for all colonic injuries was replaced by the idea that majority (if not all) colon wounds can be repaired without diversion.<sup>18</sup> Controversy remains concentrating on optimal management of injuries requiring resection. Data in this study represent situation in civil war and deterioration of health system. Conclusion: In spite of critical situation by widespread violence and eroding of health system, the findings were compatible with famous centers in the world.

#### Authors' contributions:

Dr. Najim Al-Khaldy: study conception and design interpretation and analysis, revision.

Dr. Ali Al hashimi: study conception data interpretation and analysis drafting of revision.

Dr. Marduk Sami AbdAli: Study design interpretation and analysis.

#### References:

1. Corman ML. *Colon and rectal surgery*. 3<sup>rd</sup> edition. USA, Philadelphia, JP. Stomas Lippincott. 1993. P. 1077-1192.
2. Ogilvia WH. *Abdominal wounds in the western desert*. *Surg Gynae Obstet* 1944; 78: 225-230.
3. Fraser J, Drummond H. *A clinical and experimental study of three hundred perforating wounds of abdomen*. *BMJ* 1917; 1: 321-330.
4. Miller PR, Fabian TC, Croce MA, Magnotti LJ, Pritchard FE, Minard G et al. *Improving outcomes*

*following penetrating colon wounds: application of clinical pathway*. *Ann Surg* 2002; 235: 775-781.

5. Mahmood SS, Mohamed MJ. *Where and why do we select the type and site of colostomy in children below two years?* *The Iraqi JMS* 2015; 13: 137-142.

6. Hameed AG, Saood MJ, Abdulla MH. *Pattern and outcome of colonic injuries among a sample of Iraqi patients*. *Int Surg J* 2017; 4: 3817-3821.

7. Sulaiman TI, Zain AZ, Fadhil AZ. *A study of 100 cases of stomas performed in Child's Teaching Hospital in Baghdad*. *Iraqi Postgraduate Medical J* 2010; 9: 300-305.

8. Abdul-Gafoor BH, Al-Dabbagh HM. *Colostomy closure in pediatric age group: a comparative study between single and double layer anastomosis*. *J Fac Med Baghdad* 2007; 49: 9-12.

9. Fearson JD. *Iraq's civil war*. *foreign Affairs* 2007; 86: 2-16.

10. Shata MH. *Colostomy closure in penetrating abdominal wall injuries: a comparative study in preparation, surgical technique, suture materials and complications*. A thesis submitted to the scientific council of Medical Specialization. 1995.

11. Bischoff A, Levitt MA, Lawal TA. *Colostomy closure: how to avoid complications*. *Pediatr Sur Int* 2010; 26: 1087-1092.

12. Kiyasn Y, Kano N. *Huge recto-vesical fistula due to long term retention of rectal foreign body: a case report and review of literature*. *International J Surgery Case eport* 2017; 31:163-166.

13. Karateke F, Das K, Ozyazici S, Meneksi E, Koseoglu Z, Karacioglu O. *Anorectal injuries due to foreign bodies: case report and review of the management options*. *Case report in surgery* 2013. [Http://dx.doi.org/10.1155/2013/809592](http://dx.doi.org/10.1155/2013/809592) (accessed on 17/4/2018).

14. Pokron H, Herkner H, Jakesz R, Herb TJ. *Mortality and complications after stoma closure*. *Arch Surg* 2005; 140: 956-960.

15. Pokorny RM, Hemiford T, Allen JW, Tuckson WB, Galandiuk S. *Limited utility of preoperative studies in preparation for colostomy closure*. *Am Surg* 1999; 65: 338-340.

16. Miller PR, Fabian TC, Croce MA, Magontti LJ, Pritchard FE, Minard G et al. *Improving outcome following penetrating colon wounds: a pplication of clinical pathway*. *Ann Surg* 2002; 235: 775-778.

17. Pokorny RM, Hemiford T, Allen JW, Tuckson WB, Galandiuk S. *Limited utility of preoperative studies in preparation for colostomy closure*. *Am Surg* 1999; 65: 338-340.

18. Miller PR, Fabian TC, Croce MA, Magontti LJ, Pritchard FE, Minard G et al. *Improving outcome following penetrating colon wounds: application of clinical pathway*. *Ann Surg* 2002; 235: 775-778.

## غلق فغر القولون في عراق ما بعد الازمة

د. نجم الخالدي  
د. علي الهاشمي  
د. مردوخ عبد علي

**الخلفية:** فغر القولون يقلل من مخاطر التسرب على حساب الحاجة الى عملية اخرى. في العراق، الادبيات المنشورة عن عمليات غلق فغر القولون الناتج من الجروح النافذة لجدار البطن قليلة.

**الهدف:** لتسجيل التخمين نتائج عملية غلق فغر القولون في عراق ما بعد النزاع.

**الطرق:** تناولت الدراسة 52 مريضاً خضع لعملية فغر القولون للفترة 2008 الى 2009 من مستشفى اليرموك التعليمي ومستشفى الطفل المركزي التعليمي. تم استحصال معلومات ديموغرافية عن المرضى، وكذلك معلومات عن فغر القولون (النوع، وطرق تحضير المريض وغيرها).

**النتائج:** الجروح كانت السبب في تشكيل فغر القولون في 57.7% من المرضى. القولون المستعرض كان الاكثر اصابة بالجروح. ومضاعفات عملية غلق فغر القولون كانت خمج الجرح (19.2%)، الناسور البرازي (3.8%)، والتسرب التفاضلي (1.9%) وخراج البطن (1.9%). المضاعفات من عملية غلق فغر القولون مرتبطة معنويًا مع طريق التحضير التقليدي، واستخدام طبقتين (0.003, 0.004 = p، على التوالي).

**استنتاج:** نتائج عملية غلق فغر القولون تتوافق مع نتائج العمليات في المراكز العالمية.

**مفتاح الكلمات:** غلق فغر القولون، الجروح، المضاعفات، العراق بعد العنف.