Typhoid perforation in children: Effect of time interval after perforation on primary repair

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From 1991 to 1994, 22 patients with typhoid perforation were treated in the Department Of Paediatric Surgery Nishtar Medical College and Hospital Multan. Male to female ratio was 3:1. The age ranges from 5 to 10 years. Six patients (27.3%) were operated with in 24 hours after the onset of perforation (A), twelve patients (54.6%) after 24 hours but before 48 hours (B) and four (18.2%) after 48 hours of perforation (C).Primary closure of perforation with 2 layers of interrupted silk sutures were done in all the patients after excision of necrotic margin and undermining ulcer. Repair was successful in group A and B patients who were operated upon before 48 hours. Repair broke down in both GC patients who survived after operation. Morbidity was negligible in GA, increased in GB and very high in GC patients. Average hospital stay was 10, 25 and 35 days in GA,GB and GC patients respectively.

Key Words: Child, Typhoid Perforation, Interval, Primary Repair .

Typhoid fever is still a major health problem in developing parts of world with an estimated incidence of 540 per 100,000[1,7]. One of its most lethal complication is Ileal perforation which especially affects the younger patients[2]. Once perforation occurs, the patient who is already suffering from serious primary illness, deteriorates rapidly. Unless the condition is recognised early and treated vigorously, a favorable outcome cannot be anticipated[3].

Surgical treatment for typhoid perforation is now widely accepted and preferred over conservative therapy[4]. But whether the perforation should be closed primarily or be exteriorized is still a matter of controversy[5]. We have done primary closures in 22 cases. In our view, the decision depends upon many factors. When general condition of the patient is not so poor, patient presented with in 48 hours of perforation and the gut adjacent to the perforation is healthy, primary repair should be done otherwise the perforation should be exteriorised.

Material and Methods

This prospective study was carried out at Department of Paediatric Surgery Nishtar Medical College and Hospital Multan from Sep 1991 to Feb 1994. The objective of the study was to analyze the result of primary closure of typhoid perforation in children with relation to time interval between onset of perforation and surgery. A predesigned computer based proforma was used to record clinical and Lab data, the interval between intestinal perforation and surgery, outcome of surgery performed, and hospital stay.

After diagnosis was made by clinical examination, x-rays plane abdomen and Widal test, patients were categorized into group A, B and C (Table 1). The time of onset of perforation was assessed when the pain in abdomen got worse and distension started. Patients were promptly but adequately resuscitated before surgery. Fluid and electrolytes deficit was corrected with crystalloid solutions, blood transfused when Hb% was less than 10G% and triple regimen of antibiotics (Amoxicillin, genticyn and metronidazole) started in all patients. However, Amoxycillin was replaced with chloromycetin in cases where fever did not settle down in 3 days.

Table.1: Time Interval Between Perforation and Surgery

Category of Patients	Time Interval	n=
A	24 hours.	6
B	24-48 hours.	12
C	48 hours.	4

Abdomen was opened through right upper transverse incision. Perforation (or perforations) were closed with 2 layers of interrupted silk sutures after excision of necrotic margins and undermining ulcer. Abdomen washed with copious amount of normal saline and mass closure of the wound was done with No.1 Prolene after placing the drain in pelvic cavity. Post-operatively, wound was examined daily and efforts were made to improve the general condition of the patient by hyperalimentation and where necessary, blood transfused.

Results

Primary closure proved to be extremely successful (100%) in group A and B with no anastomotic leak although post operative complications were significantly higher in group B (Table 2). Primary closure was unsuccessful and proved dangerous in group C patients as half of those died in early post-operative period and half developed anastomotic leak.

Table 2: Post - Operative Complications

Category	S	W.I	W.D	A.L	P.Abs	F.F.	Hosp stay
A	nil	2	nil	nil	nil	nil	10 d.
B	1	4	2	nil	1	nil	25 d.
C	2	2	nil	2	nil	1	35 d.

KEY: s=septicemia, w.i.=wound infection, w.d.=wound dehiscence, a.l.=anastomotic leak, p.abs=pelvic abscess, F.F.=fecal fistula

Discussion

Prognosis in typhoid perforation depends upon many factors. After adequate resuscitation of patients, two major factors which directly affect the out come are:

(1) Time interval between perforation and surgery

(2) Choice of surgical treatment

Studies by Akoh-JA[6], Richens-J[4] and Vander-Werf-TS[8] has pointed that survival is poor when interval between perforation and surgery exceeds 48 hours. We have observed in our study that type of surgery is also closely linked with interval and both parameters affect the outcome simultaneously. Primary repair is safe during first 48 hours and results are excellent during first 24 hour. Six patients in our study categorised as "A" were operated with in 24 hours. Only two patients got their wounds infected. No other complication was seen in this group(table 2). Their average hospital stay was 10 days. 12 patients categorised as "B" were operated in 2nd 24 hour. Although there was no difference of Hb%, electrolyte deficit and hyperalimentation between group "A" and "B", the rate of post-operative complications were significantly higher. But what is more significant is that repair did not give way in any patient of group "B". Thus inspite of increased morbidity in this group, there was no mortality. In 3rd group labeled as "C", there were 4 patients who underwent surgery after 48 hours. The results of primary repair were fraught with failure. Two patients died with septicemia after surgery on 2nd and 3rd post-operative day. In rest of two patients, repair broke down although at the time of surgery viability of the gut was assured. In one patient, perforation had to be exteriorised while in other it became localised and fecal fistula formed which was closed after 6 weeks. Although both patients survived but the morbidity was very much increased.

We believe that in such patients advanced septicemia some how hinders the repair process.

Conclusion

Primary closure of typhoid perforation is a definite option when surgery is performed with in 24 to 48 hours. It is safe during this period and it reduces the hospital stay[9,10,11]. Enterostomies are no good choice during this period. These are very difficult to tolerate by the children. Losses are copious and need vigilant care to avoid dehydration in small kids. Skin problems require meticulous daily care which is very troublesome for the parents. Above all, the necessity for a second operation to restore the continuity of the gut is the major factor to be considered while doing any procedure. However, when the patient comes late (after 48 hours), primary closure should not be done because chances of reperforation are very high. Enterostomy is a life saving procedure in such cases.

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