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Research Article

Short Term Outcomes after Hartmann's Procedure: A Single Centre Experience

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1. Abstract

1.1. Background: The management of acute left-sided colonic obstruction still remains a challenging problem despite significant progress. Urgent surgery involving a Hartmann's Procedure (HP) is still associated with a high postoperative morbidity rate.

1.2. Aims: To compare our emergency HP outcomes with the published literature and assess our practice for any potential factors that could be optimized to reach better outcomes.

1.3. Methods: We audited the decision-making process, timelines and short-term outcomes of all emergency HPs in our hospital from Feb 2014 to Sept 2017.

1.4. Results: A total of 87 patients underwent emergency Hartmann's operation for different indications included. Median preoperative P-POSSUM mortality estimation was 14.8% (IQR 5.1%-37.2%) while median preoperative P-POSSUM morbidity estimation was 87.2% (IQR 67.5%-96%. 61 patients (70.1%) had some degree of contamination intra-operatively. 10 cases (11.5%) died before discharge. Total complication rate was 47.1% while re-operation rate was 6.9%.

1.5. Conclusion: Our outcomes after HP are comparable to the published literature. Further studies are needed to investigate our patient selection process for HP.

2. Keywords: Hartmann's Procedure; Colonic obstruction

3. Introduction

Hartmann's procedure (HP) remains one of the main emergency management options for acute complicated left colon pathology [1, 2]. Regardless of the aetiology, Perforation and obstruction are the two indications for HP. The assumed benefits of HP include the decreased risk of anastomotic dehiscence, fistula formation, and that it can be performed by a less experienced surgeon in an emergency scenario [3]. The disadvantages are that the patient will require further major surgery for reversal, and as many as 40-60% do not proceed to reversal, significantly reducing their quality of life [3, 4]. In addition, Hartmann's Procedure (HP) is associated with a high postoperative morbidity rate of up to 50%, and a significant mortality rate, ranging from 15 to 25% [6-9] Morbidity of HP is mainly due to septic complications, such as wound infection or intra-abdominal abscesses, and cardio respiratory complications. Stoma-related complications are also very common, ranging between 21% and 70% [10, 11].

In this article, we present our patients' outcomes following HP. We also report on the decision-making process leading to HP in our hospital (Table 1).

Table1: Results prior to grouping.

	Gender	Mortality at discharge	Complication	Re-operation	Intra op. contamination
N	M:47; F:40	10	41	6	Yes: 61; No: 26
%	54%; 46%	11.50%	47.1	6.9	70.1%; 29.9%

4. Methods

We audited the decision-making process, timelines and short-term outcomes of all emergency HPs in our hospital from Feb 2014 to Sept 2017. We used the prospectively populated "NELA" audit database to collect all the emergency HP cases. We analysed how the time to consultant review (</> 12 hours) and the duration from admission to operation (<24, <48, <72, and >72 hours) affected the outcome. The primary outcome was mortality. Secondary outcomes were complication rate, re-operation rate, and hospital stay. Data analyses were conducted using SPSS version 24(SPSS, Chicago, Illinois). Comparison between groups regarding mortality, complication rate, and re-operation rate was tested using Chi Square Test (and Fisher's Exact Test when indicated).Mann Whitney test was used to assess difference between groups in patients' age, pre-operative P-POSSUM mortality score, and hospital stay. The significance level was taken as a P-value of <0.05 (Table2).

Table2: comparison between groups.

	Review < 12h	Review > 12h	Operation <24h	Operation <48h	Operation <72h	Operation >72h
Age (median)	71	68	69	69	67	76
P value	0.51		0.15	0.11	0.07	
Mortality (%)	2.7	17.9	14.3	9.8	8.5	17.9
P value	0.09		0.31			
Complications %	48.6	48.7	40	41.2	39	64.3
P value	1		0.38	0.2	0.038	
Re-operation %	8.1	5.1	14.3	11.8	10.2	0
P value	0.67		0.037	0.04	0.17	
Hospital stay (median)	14	12	11	12	10	17
P value	0.42		0.31	0.17	0.02	

4. Results

Summary of the main results is shown in tables 1 and 2. Within the study period, 87 patients underwent emergency Hartmann's operation for different indications. Male to female ratio was 1.18:1. Median age was 70 years (inter-quartile range (IQR) 59-79). 48% of the patients were reviewed by a consultant surgeon within 12 hours from admission with a median of 12.3 hours (IQR 3.6-21.2).40.2 % of the patients had the operation in the first 24 hours after admission, 58.6 % in 48 hours, and 67.8 % in 72 hours. The median time from admission to having the operation was 36 hours (IQR 14.3-108.6). ASA score percentages were 6.9%, 49.4%, 29.9%, 12.6%, and 1.1%for grades 1-5 respectively (Figure 1).

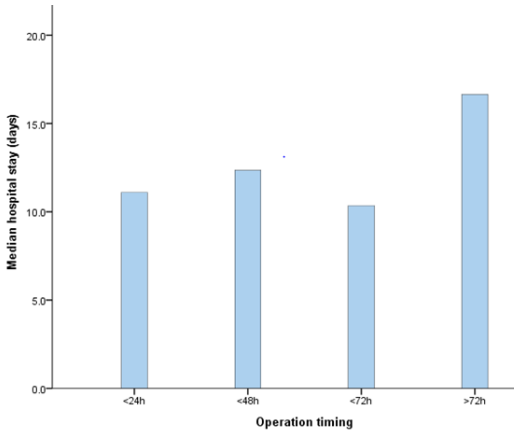

Figure 1: Hospital stay by group (according to operation timing).

Median preoperative P-POSSUM mortality estimation was 14.8 % (IQR 5.1%-37.2%) while median preoperative P-POSSUM morbidity estimation was 87.2 % (IQR 67.5%-96%. 61 patients (70.1 %) had some degree of contamination intra-operatively. 10 cases (11.5 %) died before discharge. Total complication rate was 47.1% while re-operation rate was 6.9% (some cases needed second and third operations). We analysed the relation between mortality, complication rate, and re-operation rate at one side and different management time frames at the other side (the time from admission to consultant review and from admission to surgery). The difference in mortality between groups was not statistically significant. On the other hand, complication rates were significantly higher in the patients who had their operation > 72 hours from admission (P-value 0.038). Interestingly, patients who had their operation within 24 and 48 hours from admission had significantly higher re-operation rates (P-Value 0.037 and 0.04 respectively). The median hospital stay was 13 days (IQR 7-19). The difference in hospital stay between groups was only significant when comparing time from admission to operation at </> 72 hours. Patients who had their operation after 72 hours from admission stayed longer (P value 0.02) (figures1 and 2). Patients' age was comparable across different groups. Patients who had their operation >72 hours from admission had a significantly higher pre-operative P-POSSUM mortality score (P value 0.02) (Figure 2).

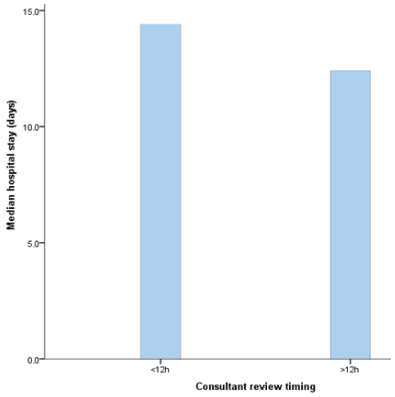

Figure 2: Hospital stay by group (according to consultant review timing).

5. Discussion

Our study revealed mortality rate of 11.5% across all groups. This is comparable with the rates reported in the literature. Toro et al. quote mortality from HPs - for complicated diverticulitis - over the last 20 years from 18 different studies as17.4%. Our median hospital stay was relatively long at 13 days. We used hospital stay to reflect post-operative morbidity. It can also act as a surrogate for hospitalization cost. There is little on the literature on the relationship between time to decision to operate and outcome. Our analysis suggests that early consultant review does not affect the outcome – both mortality and morbidity as reflected by hospital stay. This would imply that patients presented overnight can safely wait for consultant review in the morning.

The analysis of operation timing again does not show statistically significant difference between groups in mortality. This doesn't take in consideration the indication for surgery and the rational of the delay. These factors have the potential to make the groups distinctly different in terms of patient type despite, seemingly, having the same management. This is important to observe when interpreting the statistically significant difference in hospital stay. Our analysis shows that patients who had their operation beyond 72 hours from admission stayed longer in hospital – implying increased morbidity and cost. However, we should be careful to establish a causality relation based on this result. It is debatable whether the delay of the operation was a cause of the longer hospital stay or a result of a distinctly different type of patient. The former indicates a change in our practice towards earlier operation. The later, however, is supported by our analysis of pre-operative P-POSSUM mortality score – which was significantly higher in patients who had their operation after 72 hours. It is, therefore, imperative to account for the above-mentioned factors before drawing any conclusions or suggesting changes in practice.

Further work is needed to assess the complications both during the operation and post operatively as well as the rate of re-operation. Yet more important is to analyse the indications for HP in our practice. A mortality rate of 12.6% is still significantly higher than the reported mortality rate after resection and primary anastomosis (3.8%). While this audit aimed at optimizing our performance of HP, it is likely that a more significant change in practice is to optimize our selection of patients for HP.3-5.

6. Conclusion

Our outcomes after HP are comparable to the published literature. It is not clear whether the decision-making process has affected the outcomes or not. Further studies are needed to investigate our patient selection process for HP.

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