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Who gets Hartmann's reversed in a regional centre?

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ABSTRACT

Background: Many patients who undergo a Hartmann's procedure do not have their stoma reversed. We analysed parameters and co-morbidity scales to assess their accuracy in predicting likelihood of undergoing reversal.

Material and methods: Retrospective analysis of 165 patients from a prospective colorectal database who were discharged home following a Hartmann's procedure at Barwon Health (Geelong, Australia), a regional centre, between 2002 and 2010. Parameters measured included age, sex, time to reversal, ICU admission and pathology results were recorded. Patients' ASA, POSSUM and Elixhauser co-morbidity scales were retrospectively analysed.

Results: Reversal of Hartmann's was performed in 74/165 (45%) patients after a median of 294 days (range 70–902). Age (mean 58.5 vs 72.9 years, $p < 0.001$), ICU stay (34/74 vs 66/91, $p < 0.001$), ASA ($p < 0.002$), Elixhauser co-morbidity count (mean 1.14 vs 1.92, $p < 0.002$) and a malignant diagnosis (9/74 vs 31/91, $p < 0.002$) were all associated with a decreased reversal rate on univariate analysis. Age was the only parameter found to be significant on multivariate analysis. The complication rate was 23/74, with 7/74 noted to have major complications (Clavian-Dindo III–IV). Reasons for not reversing patients included age and co-morbidities, patient refusal, and malignant disease progression.

Conclusions: More than half the patients undergoing a Hartmann's procedure did not proceed to a closure of their stoma. Age was the only parameter significant in predicting those patients undergoing reversal.

Introduction

Albert Henri Hartmann initially described his operation in 1921 for the treatment of malignant obstruction of the colon.[1] His technique was originally described for use in left sided colon carcinoma, however is now an accepted practice for many diseases of the colon and rectum where conditions for an anastomosis are unfavourable. Reversal of Hartmann's, while in most cases is technically possible, is often not performed. Difficulties include identification of a short rectal stump and dense adhesions.[2] Yet despite technical

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improvements such as the advent of circular staplers, improvements in intensive care and advanced organ support, reversal rates are reported between 26 and 61%.[2–5]

One of the reasons for the low reversal rate is the morbidity and mortality from the reversal operation. Morbidity has been quoted up to 41% with leak rates between 4 and 16%, and mortality has been reported in up to 4.5%.[2,4,6] Patient factors and co-morbid disease are other reasons for non-reversal.[2] There is interest in predicting those patients who are likely to undergo reversal in order to better counsel patients as well as decision making in regards to length of colonic dissection and stoma creation.[7] A study by Riansuwan et al. has found the pre-operative factors of increased age, pre-operative transfusion, pulmonary co-morbidity, pre-operative classification grading developed by the American Society of Anaesthesiologists (ASA), anticoagulation and diverticular perforation as significant predictors, albeit in patients with diverticulitis only.[7]

We retrospectively analysed our prospective colorectal database between 2002 and 2010 at Barwon Health, a regional centre in Victoria, to determine the reversal rates of Hartmann's procedures at our institution and factors influencing this decision.

Material and methods

Data source

Patient data was acquired from a prospective colorectal database in our institution (Barwon Health, Geelong) from 2002 to 2010. Age, sex, time to reversal, ICU admission and pathology results were recorded. Patient records were also retrospectively analysed for the prognostic indicator scores POSSUM (physiological and operative severity score for the enumeration of mortality and morbidity) score,[8] Elixhauser co-morbidity count[9] and ASA where available. Morbidity and mortality from the reversal of Hartmann's procedure were recorded. Reasons for non-reversal of Hartmann's procedure were identified from hospital records and from telephonic questioning of patients.

Statistical analysis

Data were stored in Microsoft Excel® (Microsoft Corporation, Santa Rosa, USA) and categorical data were compared using the chi square test using the same program. Data were entered into Minitab® (Minitab Inc., State College, USA) and ordinal data were compared using Student's t-test. Multivariate analysis was performed using binary logistic regression with reversal as the response and a confidence interval of 95.0 for all intervals.

Results

A total of 165 patients who were discharged home following a Hartmann's procedure were identified from our prospective database between 2002 and 2010. Of these, 74/165 patients (45%) underwent a reversal of Hartmann's procedure at a median of 294 days following the original operation (range 70–902 days). The cumulative probability of reversal in those patients undergoing reversal is shown in Fig. 1, with 13/74 and 49/74 of patients being reversed within 6 months and 12 months respectively.

Patient parameters associated with reversal of Hartmann's

Table 1 summarises the parameters recorded for the identified patients, grouped into Reversed and Not Reversed. There was no significant difference in gender between the two groups, however age was significant on univariate analysis with younger patients more likely to undergo reversal (mean age 58.5 vs 72.9 years, $p < 0.0001$). Figure 2 compares the age of patients in patients who underwent reversal of their Hartmann's against those who didn't. This

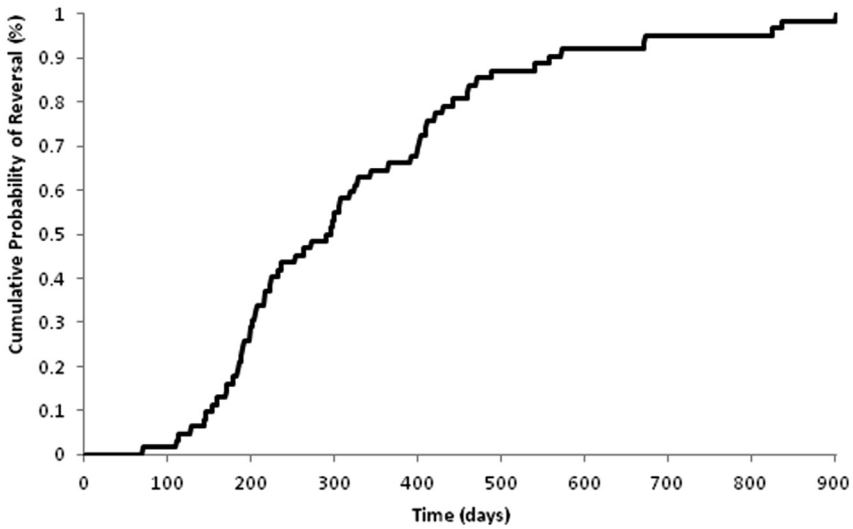

Fig. 1 – Cumulative probability of reversal of Hartmann's over time in the group of patients that underwent reversal of Hartmann's.

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