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UNIVARIATE AND MULTIVARIATE ANALYSIS EXAMINING FACTORS ASSOCIATED WITH ENTEROCUTANEOUS FISTULAE HEALING WITH DEVELOPMENT OF A SCORING SYSTEM

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G Rahbour,^{1*} S Gabe,² J Warusavitarne,¹ P Tozer,¹ N Daulatzai,¹ C J Vaizey¹ ¹*Colorectal and Intestinal Failure Surgery, St. Mark's Hospital and Academic Institute, London, UK;* ²*Gastroenterology, St. Mark's Hospital and Academic Institute, London, UK*

Introduction The aim of the analysis was to examine factors associated with the fistulae healing at a national intestinal failure centre and secondly to devise a scoring system to predict this outcome.

Methods Our study collected information from 177 consecutive patients managed with enterocutaneous fistulae over 8 years (January 2003–June 2010). Statistical analysis was undertaken using Stata software programme.

Fistulae healing were measured on a binary scale. As a result of the binary nature of the outcome, all analysis was performed using logistic regression.

Univariate analysis was performed on variables: age, co-morbidity, body mass index, source of referral, time to referral, aetiology, fistulae origin, fistulae complexity, fistulae output, presence of laparostomy, albumin on presentation, number of previous operations, time of surgery, bowel defunctioning. Odds ratio was used to reflect odds of fistulae healing in each category relative to a baseline.

Multivariate analysis of the explanatory variables upon the outcomes was examined. The results were used to generate a scoring system for predicting fistulae healing. The scoring system was evaluated by comparing the predicted healing rate with that observed from the data.

Results Comorbidity was strongly associated with fistulae healing ($p=0.02$). Patients from external sources were less likely to heal ($p=0.05$). Aetiology affected healing ($p=0.06$) and age ($p=0.08$).

Multivariate analysis revealed co-morbidity ($p=0.02$), source of referral ($p=0.01$) and aetiology ($p=0.006$) all had a significant association with fistulae healing.

A scoring system was devised with points attributed based on each point equated to a regression coefficient of approximately -1.2 . Hence 2 points equated to a coefficient of -2.4 . The predicted regression equation was $\text{logit}(p) = \log(p/(1-p)) = 6.3 - 1.2 \times \text{Number of points}$. From this, the predicted probability of healing could be calculated. Predicted occurrences of fistulae healing were compared with those observed from the data.

Conclusion Fistulae healing is affected by co-morbidity, source of referral and aetiology. There was an extremely good agreement between the observed and predicted percentage of patients that are healed within each category. This suggests that the model performs well for this dataset. The scoring system can provide further information to aiding management to the multidisciplinary team and long-term outcome. Further revision of the multivariate analysis and scoring system has

been performed to make the system suitable for use at an external site. We are performing a retrospective validation on a second group of patients from a different centre.

Competing interests None.

Keywords Enterocutaneous, Fistula.

Table 1 PTU-057

Predicted & Observed Fistulae Healing

Points	Number patients	Predicted healing (%)	Observed healing: Number (%)
0–1	16	99%	16 (100%)
2	36	98%	35 (97%)
3	32	94%	31 (97%)
4	57	82%	59 (98%)
5–6	36	53%	13 (61%)