RESEARCH

Efficacy of nasal bridles in avoiding percutaneous endoscopic gastrostomy placement

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Abstract

Objective The aim of the study was to report the use of nasogastric tube bridles to avoid dislodging of percutaneous endoscopic gastrostomy tubes. Specifically it was intended to see if they reduced feeding time, medical input and costs.

Design and setting This was a cohort study in a district hospital setting.

Patients 164 patients admitted with conditions causing acutely impaired swallowing.

Interventions 140 of 164 patients referred received a NGT bridle.

Results Of these, 49 (35%) died by 28 days and 68 (48.6%) at 1 year; 73 (52.1%) had regained adequate oral intake at 28 days and 27 (19.2%) had proceeded to PEG. Of those not bridled, nine (37.5%) died by 28 days and 10 (41.7%) at 1 year with the remainder eating. There was no significant difference in mortality between groups. There were no complications attributed to bridles.

Conclusion We conclude that nasogastric bridles are safe and represent an appropriate method to maintain nutrition while seeing if the underlying disease process will stabilise in these critically ill patients. They have the benefits of avoiding unnecessary PEG and the associated complications and cost.

Background

Nutritional support is recommended when oral intake is inadequate or likely to be inadequate for a period of 5 days or more.¹ Malnutrition results from prolonged inadequate intake and is associated with elevated morbidity and mortality.²

When the gut is functioning but intake is inadequate, enteral tube feeding is the preferred route of supplementation. It is primarily provided through one of two routes: nasogastric tube (NGT) or

gastrostomy, most commonly percutaneous endoscopic gastrostomy (PEG). We do not consider parenteral nutrition in this study.

NGTs are easily placed but are often unsuitable for prolonged use and are associated with a reduction in overall feeding time when compared with gastrostomy,³ primarily due to frequent accidental removals of NGT. The rate of unintentional dislodgement of NGTs may reach 40%.⁴ Frequent removals are associated with reduced feeding time, which may in some circumstances result in increased mortality when compared with gastrostomy.⁵ Each placement of a NGT carries the danger of an incorrectly placed tube with the possibility of feeding into the respiratory tract.⁶

When NGTs are recurrently dislodged and intake inadequate, PEG insertion is the current standard. PEG insertion is associated with significant morbidity and mortality, especially immediately postprocedure and during the first 30 days.⁷ A large-scale audit has expressed concern at large numbers of futile PEG placements and has suggested that many are placed too early.⁸ Avoiding the need for PEG by increasing the reliability of NGTs is an attractive option. In our hospital, we have introduced NGT bridles to manage recurrently dislodged NGTs. Nasogastric bridles have shown promise in both critical^{4,9} and general inpatient care¹⁰ by reducing the need for NGT replacement, increasing calorific intake and saving money. However, the use of NGT bridles is not widespread in the UK.

In this study, we report our experience over 36 months in a large British District General Hospital using nasal bridles to secure recurrently dislodged NGTs in patients referred to the nutrition support

team when receiving inadequate nutrition by standard unsecured NGT and who were considered for NGT bridles. We report indication, complications, numbers proceeding to gastrostomy, numbers returning to adequate oral intake and overall mortality at 1 month and 1 year.

Bridle

A nasal bridle is a tape that secures an NGT by being tied around the nasal septum. The system we use (AMT Bridle, Applied Medical Technology, Brecksville, Ohio, USA) involves umbilical tape looped around the nasal septum using a stiff magnetic stylet and a second, more flexible, magnetic introducer with removable guide wire. A plastic clip attaches the tape to the NGT. The bridle is placed at the bedside without sedation and fitting takes around 10 min. Nasal bridles have been shown to reduce feeding tube removal rates,⁴ increase the life of individual tubes,¹¹ increase caloric intake among NGT-fed patients,⁴ reduce rates of PEG placement¹⁰ and save money when compared with repeatedly replacing NGTs.⁹ It has also been suggested that nasal bridles reduce PEG-associated mortality by offering an alternative to PEG in potentially inappropriate patients.¹⁰

Method

A computerised database held by the nutrition support team at the Royal Berkshire Hospital, a district general hospital in Reading, UK, with 607 inpatient beds was interrogated for those inpatients referred for nasal bridle placement between June 2007, when NGT bridles were introduced, and July 2011. At the end of the study period, medical records were reviewed.

Patients were deemed suitable for bridle placement if three or more NGTs had been removed unintentionally, there was no history of nasal trauma and that they were not so confused or agitated as to risk causing nasal septal injury. Prior to nasal bridle placement, x-ray was used to check NGT positioning according to local protocol. This protocol has subsequently changed in accordance with new national guidance.

Results

Hundred and sixty-four referrals for recurrent NGT dislodgement from adult inpatient wards were received during the 36 month study period. Median age was 79 years (range 18–100) and 103 (62.4%) were men. All patients had had at least three NGTs placed prior to referral (median 4; range 3–10). Reasons for patients' impaired oral intake are detailed in table 1.

Hundred and forty of the 164 patients (85.4%) were fitted with bridles. Reasons for not placing a bridle in the remaining 24 were 10 patients refused, two patients were adjudged too unwell, six had regained sufficient oral intake, and in the remaining six, it was not possible to place a bridle or it was not tolerated immediately after placement. In 17 cases, the bridled NGT failed or was removed by the patient more than 1 day after placement. There were no complications

Table 1 Diagnoses of patients referred with impaired swallowing for nasogastric bridle

Stroke	92
Other intercurrent illness, eg, sepsis	32
Hepatic encephalopathy	7
Parkinson's disease	6
Neurodegenerative disease	3
Subarachnoid haemorrhage	7
Oncological	3
Trauma	2
Surgery	2
Hypoxic brain injury	2
Diabetic gastroparesis	2
Subdural haemorrhage	1
Central nervous system infection	1
Depression	1
Dementia	1
Congestive cardiac failure	1
Other inadequate swallowing	1
Total	164

other than minor, self-limiting nasal trauma ascribed to bridle placement. Only two patients required replacement of NGT after bridle fixation.

Where a bridled NGT was placed, feeding was delivered for a median of 7 days (range 0–63). Of those 140 in whom a nasal bridle was placed, 27 had proceeded to gastrostomy by 28 days and 33 at 1 year (one radiologically-inserted gastrostomy, others PEG). Of those 12 in whom a nasal bridle was not placed, none had proceeded to gastrostomy at 1 year.

Fifty-eight of the 164 patients referred died within 28 days (35.3%) and 78 (47.6%) died within 1 year. Of those 140 who had a bridle placed, 49 (35%) died within 28 days and 68 (48.6%) died within 1 year. There was no significant difference in mortality between those receiving a nasogastric bridle at 28 days or 1 year ($p=0.82$ and 0.43 , respectively, by Fisher's exact test). Figure 1 summarises the data.

Discussion

Our experience suggests that NGT bridles are safe and that they reduce the number of NGTs required to provide feeding. Less frequent replacement suggests greater available feeding time, although this was not explicitly measured. We note the lack of complication rate attributable to NGT bridles and contrast this with a suggested complication rate of up to 30% with PEG placement.¹²

Among our cohort, there was a high overall short-term mortality: 35.3% at 28 days. Mortality was not statistically different among those who received adequate nutrition via successfully bridled NGT (35% at 28 days) and those who were not bridled (37.5%). This suggests that in our critically ill cohort, factors other than nutrition determine outcome and so early gastrostomy may be inappropriate. A second reason to defer

Figure 1 Summary outcomes at 28 days (and 1 year).

What is already known on this subject

Nasogastric tubes (NGTs) are frequently dislodged and this reduces feeding time, increases medical input, increases costs and may make NGT unsustainable in some patients. PEG is associated with morbidity, mortality and increased cost.

What this study adds

Nasogastric bridles are safe and represent an appropriate method to maintain nutrition while seeing if the underlying disease process stabilises in critically ill patients.

How might it impact on clinical practice in the foreseeable future

Use of NGTs may avoid unnecessary PEG insertions, and the associated complications and cost.

gastrostomy among our cohort was that a significant proportion (52%) of those who received NGT bridles recovered adequate swallow within 28 days—within the lifetime of a NGT provided it remains in place.

A further advantage of avoiding PEG by using NGT bridles is cost. Our local tariff for PEG placement is around £1000 whereas an NGT bridle kit costs around £50.

It may also be inferred from our data that NG bridles reduce nursing and medical time spent replacing dislodged NGTs and, where it is required, a reduction in the requirement for radiographic confirmation of appropriate NG positioning. The placement of a nasogastric bridle takes less time and less expertise than PEG placement.

One disadvantage of NGT bridles is that they are not widely used outside of the hospital setting, whereas gastrostomy tubes are. This may mean that a patient with a NGT rather than gastrostomy has fewer options for discharge. This may improve with increased uptake of bridles. Nevertheless, two of our patients were discharged for short-term NG feeding through bridled NGT.

Major guidelines¹ state that PEG feeding should be considered whenever patients are likely to require enteral tube feeding for more than 4–6 weeks and should be considered as early as 14 days.⁵ We are not aware of guidelines on the initiation or length of use of NGTs secured with nasal bridles. We believe our data show that NGT

bridle is an appropriate bridging measure in those with acutely inadequate oral intake and with recurrent NGT dislodgement. NGT bridle may allow time for recovery of swallowing or mortality from factors unrelated to nutrition and so avoid inappropriately early PEG.

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Competing interests None.

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