Percutaneous endoscopic gastrostomy feeding after acute dysphagic stroke

Staff find it harder to stop feeding patients with a gastrostomy

EDITOR,—The initial findings of B Norton and colleagues' study comparing percutaneous endoscopic gastrostomy with nasogastric tube feeding after acute dysphagic stroke seem to suggest a better prognosis for patients fed through a gastrostomy.¹ I welcome the authors' intention to study the effects of this procedure on the long term quality of life and will be interested to learn of their findings. I would ask them to pay particular attention to how we should deal with those patients who do not make a good recovery and who face the prospect of long term feeding through their gastrostomy.

Already this is causing problems in continuing care facilities, where decisions may need to be taken on whether to continue such feeding when long term recovery does not occur. Aside from the possible legal aspects of stopping feeding, staff find it harder to stop feeding patients with a gastrostomy than patients with a nasogastric tube. It is technically simple to remove a nasogastric tube, but removing a gastrostomy requires anaesthesia. Surgery for this group of patients is not appropriate at this stage in their care. It may then become difficult for staff to continue caring for these patients while not using the "permanent" gastrostomy tube.

If the use of gastrostomy after dysphagic stroke is to become routine we must more openly recognise and deal with the ethical and emotional dilemmas that may arise as a consequence.

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Gag reflex has no role in ability to swallow

EDITOR,—B Norton and colleagues' study of percutaneous endoscopic gastrostomy feeding after acute dysphagic stroke addresses an important subject, but owing to an apparent misunderstanding of the swallowing mechanism the authors have made some fundamental errors that will have affected their results.¹ There is plenty of evidence to show that the gag reflex has no role in the ability to swallow.^{2,4}

Recently Davies *et al* have shown that up to half of fit elderly people do not have a gag reflex,² and Homer *et al*³ and Smithard *et al*⁴ as well as many others have shown that the absence of a gag reflex after a stroke does not indicate either inability to swallow or the presence of aspiration. Consequently, those patients assessed in the study as having dysphagia due to the absence of a gag reflex alone may have had a normal swallow. It is also well recognised that liquids are harder to swallow owing to their lack of cohesiveness. After a stroke many patients can swallow modified diets—for example, thickened fluids—in sufficient quantities. The

assessment of swallow used in this study is invalidated and can be classed only as a screening instrument, and hence its use may well have resulted in patients having their swallow inappropriately managed and having unnecessary procedures. A speech and language therapist should have formally assessed dysphagia, and reliance should not have been placed on the screening test that was used.

The nutritional data presented in the paper are incomplete. The authors would have served readers better if they had presented data on arm muscle circumference (a measure of lean body mass) and the triceps skinfold thickness (a measure of body fat). The changes in weight recorded in each group may have been due to fluid retention and nothing to do with nutritional changes.

I would also suggest that if patients are unable to swallow at 14 days then they should be offered a percutaneous gastrostomy and that a nasogastric tube should be used only if a gastrostomy is refused or there are other contraindications. In my stroke unit we pass nasogastric tubes on day 2 and insert gastrostomy tubes, when these are indicated, on day 14.

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Speech and language therapists should have participated in study

EDITOR,—The methods used in and assumptions underlying B Norton and colleagues' study of percutaneous endoscopic gastrostomy feeding mean that such feeding is not necessarily "the nutritional treatment of choice for patients with acute dysphagic stroke."¹

We can find no evidence that "it is common practice to delay enteral feeding in such patients for several weeks."¹ Similarly, it is not usual to persist with nasogastric tube feeding despite up to 10 displacements of the tube when a percutaneous endoscopic gastrostomy service is available, or to decide that it is "inappropriate to persevere with treatment" (tube feeding) in patients who have survived beyond two weeks. It is unclear why only patients who were unconscious on admission were included, but this and the abnormally high mortality (33%) between two and six weeks indicate the unrepresentative nature of the patients. Furthermore, it is unclear whether the treatment groups were matched for prognostically important factors, including haemorrhagic versus ischaemic stroke, cortical versus lacunar lesions, and admission to a stroke unit.

We are surprised that speech and language therapists did not participate in the study since

they have a higher sensitivity and specificity in detecting aspiration than doctors (D O Smithard *et al*, unpublished study). Dysphagia was diagnosed by "absence of a normal gag reflex or inability to swallow 50 ml of sterile water."¹ There is no relation, however, between the gag reflex and whether someone can swallow safely,² and the timed water swallow test is only a screening test and does not detect silent aspiration.³ Water is the fluid most easily aspirated, and aspiration can be prevented by modification of the diet and posture.⁴ Thus patients may have been kept nil by mouth and tube fed when they could safely have had some oral intake.

Finally, several statistical features make interpretation of the results difficult. The most obvious is the size of the group (30): our power calculations indicate that at least 80 patients are needed to test for differences in mortality and weight between nasogastric tube feeding and percutaneous endoscopic gastrostomy feeding. Another example is weight: data were unavailable for a fifth of the subjects, although weight gain was an important outcome measure.

Further investigation is necessary—with the participation of speech and language therapists and with videofluoroscopic assessment of swallowing—in a larger and more representative group before any conclusions may be safely drawn. We are currently conducting a randomised controlled trial of nasogastric tube feeding versus percutaneous endoscopic gastrostomy feeding as part of a larger study examining optimal management of subacute dysphagia in stroke.

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Radiological placement of the gastrostomy tube should be the preferred method

EDITOR,—B Norton and colleagues report that gastrostomy tube feeding is greatly superior to nasogastric tube feeding after acute dysphagic stroke.¹ We were interested to read that all gastrostomies in the series were performed with an endoscopic method, since a safer, simpler, and cheaper method exists.

Percutaneous radiologically guided gastrostomy is relatively simple and can be performed in almost any radiology department. A recent analysis of 5752 gastrostomies and a review of the literature involving a further 5680 cases concluded that it is significantly safer and more successful than endoscopic gastrostomy.² Major complications occur significantly less commonly in radiological gastrostomy (5.9%) than in endoscopic gastrostomy

(9.4%) or surgical gastrostomy (19.9%). The success rate of radiological gastrostomy is 99.2%, compared with 95.7% for endoscopic placement.

Radiological gastrostomy requires minimal sedation and is preferable to endoscopic gastrostomy, particularly in patients who are prone to aspiration (such as those with dysphagic stroke in Norton and colleagues' study), as the endoscopic method often requires heavy sedation if placement of the tube into the jejunum is considered.¹ The tube can be placed in the jejunum easily and rapidly when the radiological method is used, with no additional discomfort to the patient. Unlike with the endoscopic method, the colon can be routinely visualised during radiological gastrostomy so that inadvertent perforation of the colon when it is interposed between the stomach and anterior abdominal wall is avoided. Infection at the site of the tube is less common with the radiological method as the tube is introduced through the surgically scrubbed anterior abdominal wall rather than the contaminated oral cavity.⁴

Since radiological gastrostomy has been found to be the safest and most successful method of placing a gastrostomy tube it should be the method of choice in almost every circumstance.

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Mortality associated with nasogastric tube feeding was high

EDITOR,—B Norton and colleagues suggest that percutaneous endoscopic gastrostomy feeding is superior to nasogastric tube feeding in patients with dysphagic stroke.¹ Since their conclusions are likely to have a considerable impact on clinical practice we wish to raise several concerns about the study.

Firstly, we are concerned that decisions about providing nutritional support to these patients were not made for two weeks after admission. As it is stated that intravenous fluid was the patients' sole nutritional intake before they entered the study, their nutritional status may have deteriorated considerably before nutritional support was started.² Furthermore, the patients were then fed with starter regimens. Such practice has not been shown to offer any advantages over the institution of full feeding from day 1, and, indeed, the use of starter regimens has been shown to reduce nutritional intake significantly.³

Another of our concerns is that the resiting of inappropriately removed nasogastric feeding tubes was delayed (range 1-10 days, median 5). This delay will almost certainly have led to an inappropriate reduction in the patients' nutritional intake.

The mortality of 57% in the group fed nasogastrically is higher than that reported in other studies (0% to 11%).^{4,5} The fact that three patients in the group receiving percutaneous endoscopic gastrostomy feeding regained their ability to swallow while none in the group fed nasogastrically

did so suggests that, despite the use of standard scoring systems, the patients in the two groups may not have been comparable neurologically.

Finally, we question the practical and clinical importance of the differences in discharge rates between patients with a percutaneous endoscopic gastrostomy and those fed by a nasogastric tube. The differences may simply represent a bias by community services to accept only patients with a percutaneous endoscopic gastrostomy. As the paper shows, patients with a percutaneous endoscopic gastrostomy are often easier to manage and feed and require less nursing time than those fed by a nasogastric tube, and thus we are sympathetic to the preference of wards and nursing homes for a patient with dysphagia to have a percutaneous endoscopic gastrostomy.

In our opinion, the authors' conclusion that percutaneous endoscopic gastrostomy tube feeding is superior to nasogastric tube feeding in patients with dysphagic stroke is premature and a larger comparison of the two methods is indicated. At the moment, the data suggest to us that at a relatively late stage after dysphagic stroke percutaneous endoscopic gastrostomy feeding is superior to rather inadequately managed nasogastric tube feeding.

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Study's methods were inadequate

EDITOR,—I do not believe that the results of B Norton and colleagues' small study comparing nasogastric tube feeding and percutaneous endoscopic gastrostomy feeding in patients with dysphagia after stroke are justified.¹

Firstly, the methodology is inadequate: although computed tomography was performed in 25 of the 30 cases, the findings are not reported. Surely the extent of the stroke (was it haemorrhagic or ischaemic?) is important. Neither can it be assumed that the pathology in the five patients who did not undergo computed tomography was also that of a hemispheric stroke. The Barthel activities of daily living index is probably too coarse a measure in patients with severe disability: it does not allow for interpretation of the clinical neurological findings. No attention is paid to the level of consciousness in either group or to the existence of any coincidental medical conditions that might have an effect on nutrition or mortality.

Secondly, the use of discharge from hospital as a measure of success of the feeding regimen without mention of the extent of neurological recovery is pure extrapolation of data. Norton and colleagues fail to notice that ability to swallow was regained in more patients in the gastrostomy group, which suggests that their strokes were less severe in neurological terms, and this would therefore have implications for long term prognosis.

Finally, it must be debatable whether one

method of feeding is more likely to result in bronchopneumonia than another when no attempt is made to assess the degree of aspiration. The authors do not mention that aspiration of the patient's own secretions may be responsible for bronchopneumonia, and this is likely to depend on factors other than the method of feeding, such as level of consciousness or coexistent illnesses.

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Authors' reply

EDITOR,—Kate Mackay raises concerns about long term outcome, and we are continuing to monitor the quality of life of our patients. The ethical dilemmas should be no different for either method of feeding. Percutaneous endoscopic gastrostomy tubes can be easily removed endoscopically or, in some cases, with external traction. The legal considerations of withdrawing nutritional support must always be borne in mind.

David G Smithard and Jean Kerr and colleagues can be reassured that our patients were assessed by qualified speech therapists; we should have made this clear in our paper. Brian L Murphy and colleagues state that radiological placement of gastrostomy tubes is superior to endoscopic placement. Endoscopic placement is equally safe, and other studies have suggested a much lower complication rate (1.4% for major complications¹) than the 9.4% quoted in their letter.

H D Duncan and colleagues and Kerr and colleagues are surprised that the feeding of patients with stroke can be delayed for several weeks. In our experience this is not unusual and is another consequence of the low profile given to nutritional support in the NHS. We do not know the ideal time after a dysphagic stroke when percutaneous endoscopic gastrostomy feeding should be introduced but agree that earlier feeding is almost certainly indicated.

Duncan and colleagues express surprise at the high mortality in the group fed nasogastrically (57%) compared with that in other studies.^{2,3} If they had read these other papers more carefully they would have noticed that the series included patients with a wide variety of neurological disorders, including motor neurone disease and cerebral palsy. Comparisons should be made with the six week mortality after acute dysphagic stroke, which has been quoted as almost 50%.⁴

We are surprised that Kerr and colleagues found the statistical interpretation of our study difficult. If there is a genuinely significant difference between two sets of data this can usually be shown by simple tests; more esoteric methods are often used to squeeze out a significant difference that might not otherwise exist. A larger study is, however, required, and we are pleased that this is being undertaken by Kerr and colleagues.

Finally, we remain puzzled by Thomas Esmonde's conclusions with respect to the findings on computed tomography. The recovery of swallowing in the patients given percutaneous endoscopic gastrostomy feeding is more likely to represent part of an overall improvement secondary to better nutrition. We still conclude that percutaneous endoscopic gastrostomy feeding is the preferred method of nutritional support after acute dysphagic stroke.

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