

Percutaneous endoscopic and radiologic gastrostomy

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Valorisation

Valorisation of knowledge describes the process of value creation from scientific knowledge, by making it available for economic and social utilization (1). This chapter explains the value of the obtained study results for society, including social and economic aspects, and provides possible routes of implementation in daily practice. With this thesis, we aimed to improve the knowledge about PEGs and provide an extended reference work for health care professionals, in order to improve care.

As discussed before, enteral feeding is the main indication for placement of a PEG (2). In the Netherlands, a national prevalence survey showed malnutrition was present in approximately 20% of hospitalized patients and patient in need for chronic care, taken together. Moreover, a risk of malnutrition is present in as many as 50% of patients (3). Thus, attention should always be given to a patients' nutritional status, and supplementary or complete feeding (e.g. by PEG) should be considered more often.

On the other hand, complications of PEG can be serious, sometimes even lethal (2, 4), leading to extended social and economic impact (5). With that in mind, consideration whether or not the burden of the procedure outweighs the risks, is an important item we brought to attention. Our aim was to be of help in the decision and selection process of PEG/PRG placement.

Improvement of care

This thesis focused on a topic of multidisciplinary interest and relevance. Not only gastroenterologists, but radiologists, surgeons, neurologists, otolaryngologists, general practitioners, as well as nurses are all involved in care around PEG (4, 8).

The condition of patients prior to gastrostomy has often deteriorated due to underlying disease or malnutrition itself (4, 6, 7). Therefore, complication risks should not be too easily overlooked.

As stated before, the decision to place a PEG (or not), should be careful and thorough. Our results provide evidence-based statements that can help doctors with this process. Knowledge of risk factors and possible complications for each patient group is of major importance. When implemented in daily practice, this will lead to lower morbidity and mortality.

By studying several large groups of patients, we have provided insight in a) a new, practical and cheaper way of preventing wound infections (which is a large problem of PEG); in b) the question whether PEG or PRG is best; in c) that sedation does not poses a problem in a vulnerable patient group (ALS); in d) that PEC may help to prevent colectomy in patients with refractory constipation, and in e) that PEG-J helps to improve nutritional status and provides relief symptoms in gastroparesis.

We aimed to demonstrate that these procedures can be performed on a regular basis, are relatively easy, and compare favorable over surgery due to lower invasiveness, mortality and morbidity. An important issue is the responsibility for the selection of patients: PEG or PRG. The choice is not always clear (9). This issue was addressed as early as 1985 by Booth, who warned for gastroenterologist becoming technicians instead of consultants (10). It seems that the role of technician only, is more and more common (11). We advocate for a more consulting role of the gastroenterologist, for referring doctors may not regularly see PEG patients and therefore might have difficulties with this decision.

Applicability

The results of our research deserve implementation in the clinical care. To provide a more widespread impact, we intend to use the data obtained in this thesis to write and update Dutch guidelines on PEG/PRG. Such a guideline is being developed at this moment. Incorporation of the results in this guideline ensures implementation and public availability.

This work serves an educational purpose as well, for many questions around PEG are summarized in this thesis. Such reference work about PEG was lacking. The thesis can therefore be of use by many professionals, trainees and students of multiple disciplines. Besides that, it might be the start of more prospective research.

Social

With respect to social perspectives, several improvements of current care can be achieved. Decisions about PEG placement can be ethically challenging, in particular in case patients are mentally disabled or severely ill and not able to decide for themselves. This is regularly the case in patients undergoing PEG insertion (8, 12). As a consequence, in the process around placement of a PEG, communication with the patient and the family is of the utmost importance. Moreover, significant pressure from the patient and/or family is often present, as it appears to be difficult to accept a decision to *not* place a gastrostomy (13). In that manner, our data may help in explaining the benefits and burdens or possible complications of PEG to the patient as well as the family.

Another important social aspect of PEG is the fact that the inability to eat and need for enteral feeding is likely to have a major psychosocial and emotional impact on daily life, for social events are often accompanied by or related to eating (14). Besides that, PEG tubes itself have been associated with negative feelings such as restrictions in going outside, disturbed sleep, and negative attitudes of other people towards the gastrostomy (15). Moreover, patients with PEG tubes reported to have a lower general Quality of Life (16, 17). These social aspects again emphasize the importance of careful patient selection for gastrostomy tubes.

Costs

Costs in healthcare are a topic of major interest. Every year, the total costs of health care rise, which leads to increased health care insurance costs (18). In 2016, 96 billion euro was spent on health care in the Netherlands (18). Many possible economic benefits are provided by this thesis. With respect to macro-economic levels, careful consideration of the utility of procedures and sometimes avoiding procedures can attribute to lowering costs. Moreover, lower morbidity is accompanied by lower costs, due to a lower number of hospital visits after gastrostomy and lower procedure costs in case of complications. We have shown that with PEG, these complications and regular replacement visits are much lower in number than with PRG.

The gazes we describe in Chapter 4 cost five times less than intravenous antibiotics (€0.65 per piece vs. €2.88 for iv antibiotics per use). Despite this is only a small difference in costs, in larger numbers of patients this difference becomes relevant.

Procedural costs of PEG and PRG itself are difficult to estimate and a large variation exists in literature (19-21). In our hospital prices for placement are similar, with PRG being cheaper as a procedure, but overnight stay accounting for higher costs. We have not taken replacements into account. These costs are higher in PRG. Finally, PEG and its other applications (PEG-J, PEC) are cheaper than surgery (20, 21), and enteral nutrition by PEG is cheaper than TPV (22).

We promote a stricter patient and tube selection, based on the results and findings of this thesis. This line of clinical decision making may contribute to lowering health care costs.

Conclusion

In conclusion, numerous potential benefits of the research data we have provided, are present. Various implementations have been discussed, concerning both social and economic effects.

The major benefits include optimization of patient care by personalizing tube selection, and thereby lowering mortality and morbidity. Secondly, this way of handling will contribute to lowering costs of healthcare and achieving better quality of care. The results are directly applicable and will be implemented in guidelines.

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