
Wieloośrodzkowa analiza retrospektywna wskazań do gastrostomii odżywczej wśród polskich dzieci w okresie dziesięciu lat (2000–2010)

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Abstract

Introduction: The aim of the study was to analyze retrospectively the indications for gastrostomy in Polish children. Six medical centers which have been providing enteral nutrition participated in this study. Methods: Available medical records of children in whom the first gastrostomy was placed between 2000 and 2010 were analyzed in terms of: source and indications for gastrostomy admission, nutritional status and feeding mode preceding gastrostomy placement. Results: The analyzed group comprised of 349 children (57% males, 43% females). The mean age at first gastrostomy placement was 6.2 ± 7.4 years. 163 (46.7%) patients were fed orally and 186 (53.7%) patients received enteral nutrition via nasogastric tube before gastrostomy placement. The mean duration of nasogastric tube feeding before gastrostomy insertion amounted 37.6 ± 54.6 weeks. Body weight of most patients (278/78%) before gastrostomy placement was under the third percentile for age. Neurological impairment was present in 293 (84%) of cases. The most common indications for gastrostomy administration included dysphagia (259/74%) patients and malnutrition (62/18%). Other indications were: necessity to increase energy intake (14/4% of cases), terminal care in...
• wskazania
• pacjent pediatriczny

Introduction

Percutaneous endoscopic gastrostomy (PEG) was introduced for the first time in 1980 by Gauderer and Ponsky, since that time the procedure has been modified and improved few times [1]. PEG has become the preferred method for providing long term enteral nutrition in children with insufficient oral intake [2]. Optimal timing for gastrostomy placement remains uncertain; it varies between 2 and 12 weeks of enteral feeding in recommendations [3–5]. According to actual ESPGHAN recommendation an anticipated duration of enteral nutrition exceeding 4–6 weeks is an indication for gastrostomy and it can be prolonged in many cases [5]. Before PEG placement each case should be considered on its own. The advantages and disadvantages must be assessed by a multidisciplinary nutrition support team, taking into account the clinical condition, diagnosis, prognosis, ethical issues, patients and parents’ expectations and expected effect on quality of child’s life [3, 5–8]. In general, PEG can be used as means of exclusive or supplemental enteral tube feeding, gastric decompression and/or administration of medications [9]. It can significantly reduce feeding time, improve nutritional status and growth, but also the social functioning or quality of life. It has been demonstrated in prospective cohort studies [10, 11]. The range of indications for PEG tube use is wide and has been demonstrated in children with neurodisability, congenital heart disease, cystic fibrosis, neonatal pulmonary disease, oncological disorders, metabolic disease, genetic-chromosomal and degenerative disease, Crohn disease or chronic renal failure [12]. In literature the former indication for PEG placement is impairment or inability to swallow associated with neurological or neuromuscular disorders, such as cerebral palsy. The latter indication is the need for enteral nutrition support in patients with increased caloric requirements [9]. The aim of our study was to analyze retrospectively the indications for gastrostomy in children in Poland between 2000 and 2010. Six medical centers providing enteral nutrition participated in this study. It is the first multicenter study in our country analyzing main indications for PEG insertion in relatively big cohort (349 pts) of pediatric patients.

Methods

Six medical centers from Poland participated in this study: two Departments from Warsaw and one from Poznań, Łódź, Gdańsk and Katowice. Online electronic medical questionnaire was created to collect important information. The questionnaire was divided into nine sections: personal data (solely data concerning: patient number, patient initials, sex, date of birth), indications for gastrostomy placement, type of tube and tube problems, early and late complications, gastroesophageal reflux, quality of life, feeding mode after gastrostomy placement, nutritional and biochemical status before gastrostomy placement, nutritional and biochemical status after 6 and 12 months after PEG placement. There was a series of questions in each section. Available medical records of children in whom the first gastrostomy was placed between 2000 and 2010 were analyzed in terms of: source and indications for gastrostomy admission (main diagnosis and coexisting disorders), nutritional status (weight, percentile, biochemical status) and feeding mode preceding gastrostomy placement (orally or via nasogastric tube, type of diet, volume and number of food portions, duration of feeding via nasogastric tube (in weeks) and information if feeding via nasogastric tube was continued at home.

Results

The group of 349 children was investigated (57% males, 43% females). The mean age at first gastrostomy placement was 6.2 ± 7.4 years. Before gastrostomy placement 163 (46.7%) patients were fed orally and 186 (53.7%) patients received enteral nutrition via nasogastric tube. The mean duration of nasogastric tube feeding preceding gastrostomy insertion was 37.6 ± 54.6 weeks. Only 66 (18.9%) patients received industrial enteral formulas. Body weight of most patients (278 pts/78%) before gastrostomy placement was under the third percentile for age. Neurological impairment was present in 293 (84%) of cases. The most common indications for gastrostomy administration included dysphagia (259 pts/74% patients) and malnutrition (62/18%). Other indications were: necessity to increase energy intake (14/4% of cases), terminal care in hospice patients (11/3%) and gastrostomy as a transfer from parenteral to enteral nutrition in 3 cases. Based on medical records percutaneous endoscopic gastrostomy (PEG) was performed in 258/74% children, 80/23% patients underwent surgical procedure, and there was lack of data in 11 cases. Conclusion: The main indication for pediatric gastrostomy in Polish sites was neurological disorders with dysphagia. Malnutrition was reported in most of children before gastrostomy placement.

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Table I – Indications for PEG insertion

<table>
<thead>
<tr>
<th>Wskazania do założenia PEG</th>
<th>n = 349</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysphagia</td>
<td>259</td>
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<tr>
<td>Malnutrition</td>
<td>62</td>
</tr>
<tr>
<td>Necessity to increase energy intake</td>
<td>14</td>
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<tr>
<td>Terminal care in hospice patients</td>
<td>11</td>
</tr>
<tr>
<td>Transfer from parenteral to enteral nutrition</td>
<td>3</td>
</tr>
</tbody>
</table>

n – number of patients.

Discussion

Based on our experience the former indication for gastrostomy insertion was difficulty in swallowing due to neurological disorders (243 pts/70%). The majority of those patients suffered from cerebral palsy (94 out of 243). The latter indications for qualification for enteral tube feeding identified in our study group (29/349 children) were metabolic disorders. Neurological impairment was present in 84% of all investigated patients. Craig et al. [13] have reported similar results. In their studies the main indication for PEG insertion was cerebral palsy followed by genetic syndromes, metabolic syndromes and progressive degenerative disorders. An inability to swallow was the predominant indication for PEG in study from South Africa [14]. Srinivasan et al. [12] have described neurodisability and congenital heart disease as the principal indication for PEG insertions, while neuromuscular, metabolic causes and faltering growth were the most important indication in other studies [15–17]. Another indication for PEG is a need for supplemental alimentation in patients with increased caloric requirements. In our study, this subgroup included twelve children with congenital heart disease, twelve patients with cystic fibrosis, three children with chronic lung disease and two with chronic renal failure. The primary aim for enteral tube feeding is to avoid further loss of body weight, to correct nutritional deficiencies, to rehydrate, to promote growth in children with growth retardation and to stop the related deterioration of the quality of patient’s life due to inadequate oral nutritional intake [3]. In our study most of investigated patients (78%) were malnourished before gastrostomy placement. The mean age at first gastrostomy placement was 9.0 ± 5.7 years. In 258/74% children PEG was performed, 80/23% patients underwent surgical procedure, and there was lack of data in 11 cases. There was 38 patients in our study with body weight under 5 kg. In 21 cases percutaneous endoscopic gastrostomy was performed, the lowest body weight in this group was 3 kg. Sixteen patients had surgical procedure. The lowest body weight in this group was 2.8 kg. In one case data on the type of gastrostomy procedure was lacking. According to actual findings, PEG placement is a safe and feasible procedure in small children (under 5 kg) [3, 18]. However there are some studies which suggest restriction for PEG insertion to infants who are at least 5–10 kg [19]. Authors emphasize the fact that further multicenter randomized trials are necessary to define the risk and benefits of PEG insertion in small infant. In our study 186 (53.7%) patients received enteral nutrition via nasogastric tube (NG) before first gastrostomy insertion. The mean duration of tube feeding was 37.6 ± 54.6 weeks, which makes this time prolonged according to the actual recommendation. NG tubes are easily inserted by trained nurses or parents, but there are several drawbacks, mainly related to long term use. These include increased risk of aspiration, dislocation, nasopharyngeal irritation or enhanced mucus production. The nutritional status of unwell children is a common cause of anxiety for parents and feeding time can be stressful [11]. Many parents...
have negative attitude toward PEG and PEG related procedures. This is the main reason why parents do not give consent to PEG insertion for a long time and therefore feeding via nasogastric tube has to be prolonged. However, it has been proven through many studies that the impact of PEG feeding is positive and many parents reporting a high level of satisfaction [20] and wishing the procedure to be placed earlier [21]. Solely the indications for gastrostomy insertion were investigated thoroughly in this study. Other important data associated with gastrostomy in Polish children will be analyzed and published soon.

**Conclusion**

The indications for gastrostomy are well established. According to our experience the main indications for pediatric gastrostomy in Polish sites were neurological disorders, especially cerebral palsy with dysphagia. Malnutrition was reported in most of children before gastrostomy placement. Endoscopic procedure was performed in most cases. More than half of investigated patients were fed via nasogastric tube before gastrostomy placement which makes the mean time of tube feeding prolonged regarding the actual recommendations. The decision for PEG placement should be made individually. In group of patients receiving enteral nutrition via NG the caregivers should consider PEG earlier in the decision making process.

**Authors’ contributions/Wkład autorów**

JK – study design, data collection, acceptance of final manuscript version, AW – data collection and interpretation, statistical analysis, literature search, acceptance of final manuscript version, KP, AS-S, UC-G, ET-K, BG-K, AB, MS, SW, EH – data collection, interpretation, acceptance of final manuscript version.

**Conflict of interest/Konflikt interesu**

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**REFERENCES / PIŚMIENNICTWO**


