

Cost-Utility Analysis of Laparoscopic Versus Open Appendectomy in Children

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SYNOPSIS

Title- Cost-Utility Analysis of Laparoscopic Versus Open Appendectomy in Children

Introduction:

Appendectomy is one of the most common surgical procedures performed on children worldwide, with acute appendicitis being a frequent cause of abdominal pain necessitating surgery. There are two primary surgical techniques for appendectomy: laparoscopic appendectomy (LA) and open appendectomy (OA).

Laparoscopic appendectomy is one of the most common minimally invasive surgeries performed in children. Demonstrating its cost-utility concerning health-related quality of life (HRQoL) will support justifying the higher costs associated with this method.

Research Question: 1. How does the cost-utility of laparoscopic appendectomy compare to open appendectomy in terms of health-related quality of life (HRQoL) in children?

2. What is the incremental cost-effectiveness ratio (ICER) of laparoscopic appendectomy compared to open appendectomy in the pediatric population?

3. What threshold of cost per quality-adjusted life year (QALY) is considered acceptable for laparoscopic appendectomy to be deemed cost-effective in pediatric patients?

Objective: The objective of the study is to conduct a cost-utility analysis (CUA) comparing open appendectomy (OAp) and laparoscopic appendectomy (LAp).

Material and Methods:

To achieve this, we created a decision analytic model to calculate the cost-effectiveness of LAP versus OAp. Our analysis included data from children who had undergone surgery for uncomplicated acute appendicitis and agreed to participate by completing a validated quality of life questionnaire. We calculated the total costs incurred for each patient undergoing either procedure. For the analysis, we set a cost-effectiveness threshold, or λ , at 20,000 to 30,000 euros per quality-adjusted life year (QALY), which is a standard metric used to measure the value for money in healthcare.

Implications of Research:

1. Cost-Effectiveness:

- The study demonstrates that laparoscopic appendectomy (LAp) is cost-effective compared to open appendectomy (OAp) for non-complicated appendectomies in children. This finding supports the adoption of LAp in paediatric surgery due to its economic viability (Thesis Sara Fuentes).

2. Quality of Life (QoL) Improvements:

- The research highlights the importance of considering health-related quality of life (HRQoL) in paediatric minimally invasive surgery (MIS). The results indicate that LAp offers better HRQoL outcomes, justifying its use beyond mere cost considerations.

3. Policy and Practice Implications:

- The findings suggest that healthcare providers and policymakers should consider the broader implications of surgical techniques, including cost and QoL, to optimize resource allocation. This approach is particularly relevant in public healthcare systems where resources are limited.

4. Need for Specific Tools:

- There is a call for the development of specific tools to assess QoL in paediatric surgical patients more accurately. These tools will help in better understanding and measuring the impact of different surgical interventions on children's lives.

5. Future Research Directions:

- The study lays the groundwork for future research by suggesting prospective and randomized studies to further evaluate the HRQoL from the initial indication of any paediatric MIS procedure through the postoperative period. This future research could provide deeper insights into the economic and social perspectives of paediatric MIS.

6. Comprehensive Approach to Surgery:

- The research emphasizes the complexity of paediatric surgery, considering not just the surgical act but the entire process from outpatient visits to postoperative follow-ups. This comprehensive approach underscores the need for teamwork among nurses, anaesthetists, paediatricians, and surgeons, along with consideration of social and economic aspects.

These implications suggest that adopting LAP in paediatric surgery could lead to better economic efficiency and improved patient outcomes, promoting a shift towards more minimally invasive techniques in paediatric healthcare.