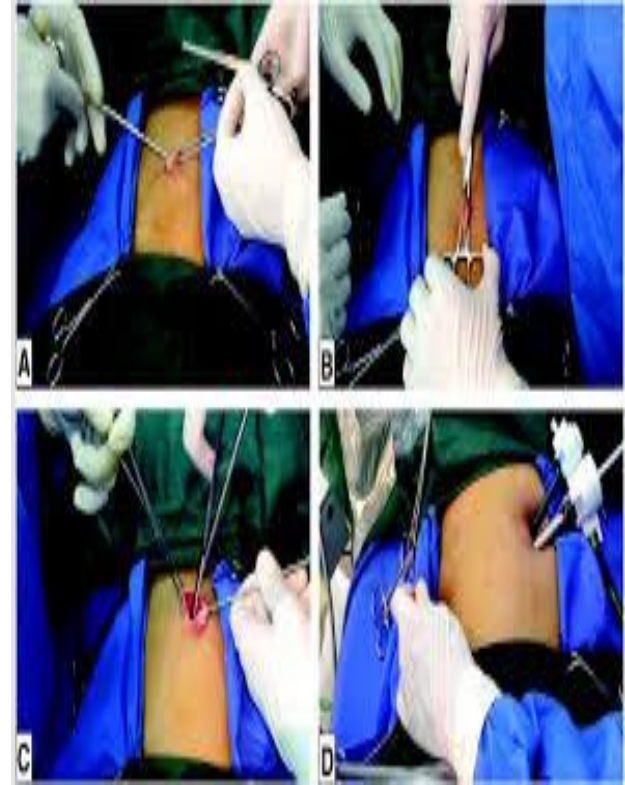


Cost-Utility Analysis of Laparoscopic Versus Open Appendectomy in Children

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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.

Laparoscopic VS Open Appendectomy

Laparoscopic Appendectomy (LA):

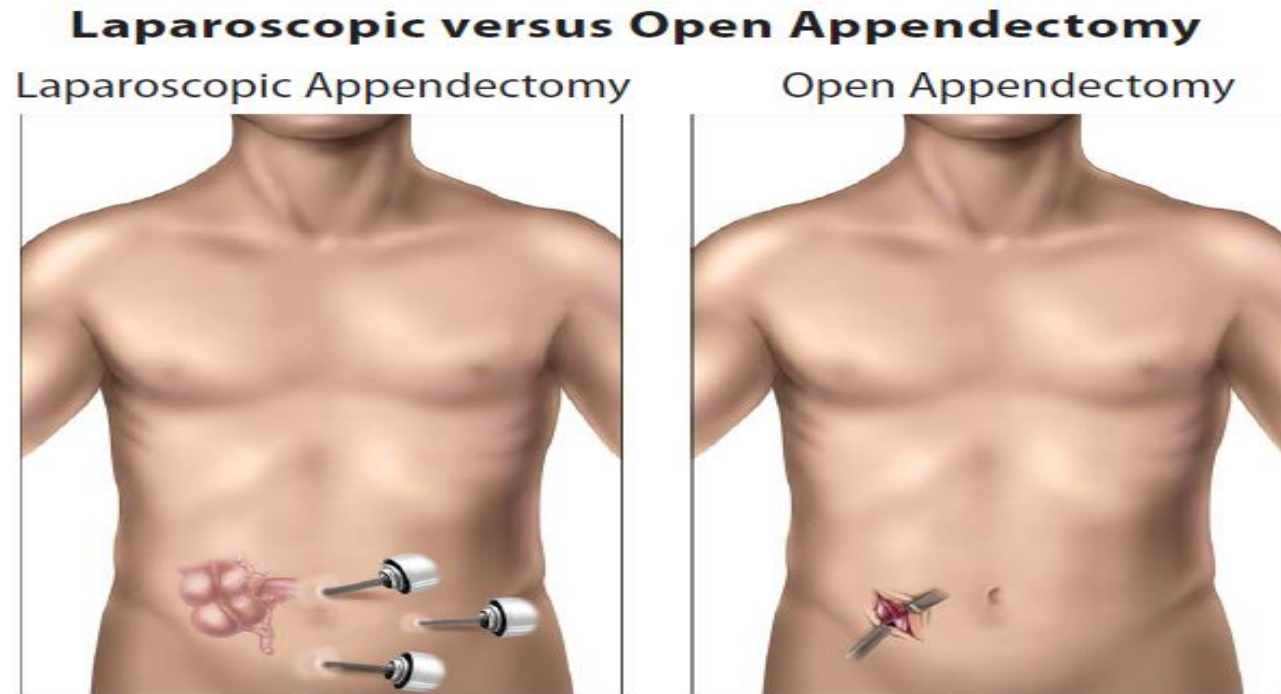
- Pros: Shorter recovery, less pain, better cosmetics, fewer infections.
- Cons: More complex, higher initial costs.
- Lower indirect costs due to shorter recovery times and less parental work absence.
- Higher QALYs from quicker return to normal activities, reduced pain, and better cosmetic outcomes.

Open Appendectomy (OA):

- Pros: Simpler, cheaper initially.
- Cons: Longer recovery, more pain, higher infection risk.
- Higher indirect costs due to longer recovery and more parental work absence.
- Lower QALYs due to longer recovery and higher complication rates.

Objective:

- To conduct a cost-utility analysis (CUA) comparing open appendectomy (OAp) and laparoscopic appendectomy (LAp).



Research Questions:

- How does the cost-utility of laparoscopic appendectomy compare to open appendectomy in terms of health-related quality of life (HRQoL) in children?
- What is the incremental cost-effectiveness ratio (ICER) of laparoscopic appendectomy compared to open appendectomy in the pediatric population?
- What threshold of cost per quality-adjusted life year (QALY) is considered acceptable for laparoscopic appendectomy to be deemed cost-effective in pediatric patients?

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 1787163.27 - 2680744.90 rupees per quality-adjusted life year (QALY), which is a standard metric used to measure the value for money in healthcare.

Results:

- We included 53 patients in the study.
- The average cost for patients undergoing open appendectomy was 67842 rupees, while the cost for those undergoing laparoscopic appendectomy was significantly higher at 136358.24 rupees.
- Despite the higher cost, the incremental cost-effectiveness ratio (ICER) was calculated to be 1608946.74 rupees per QALY, which falls within the acceptable threshold we established.

Discussion:

- Economic evaluation studies in paediatric surgery are rare and infrequently consider quality of life outcomes. This information is crucial for informed decision-making. Our findings support the use of laparoscopy in paediatric appendectomy to enhance the HRQoL of our patients.

Steps to take to make the decision analytic model.



Conclusion:

- Cost-utility analysis allows us to prove the suitability of pediatrics MIS procedures in terms of health-related quality of life and its results may justify the use of this approach in Pediatric Surgery.
- LAp is cost-effective against OAp for non-complicated appendectomy in children.
- An effort should be made on developing specific tools that could allow us to assess QoL in the pediatric surgical patient.
- Future research should be undertaken in different indications and settings to guide an evidence-based approach to pediatric MIS in a QoL-based healthcare economy.

Thankyou