



Quality of life assessment between laparoscopic appendectomy at presentation and interval appendectomy for perforated appendicitis with abscess: analysis of a prospective randomized trial

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Abstract

Purpose: The current study examined the impact of immediate laparoscopic surgery vs nonoperative initial management followed by interval appendectomy for appendicitis with abscess on child and family psychosocial well-being.

Methods: After obtaining Internal Review Board approval, 40 patients presenting with a perforated appendicitis and a well-formed abscess were randomized to surgical condition. Parents were asked to complete child quality of life and parenting stress ratings at presentation, at 2 weeks postadmission, and at approximately 12 weeks postadmission (2 weeks postoperation for the interval appendectomy group).

Results: Children in the interval arm experienced trends toward poorer quality of life at 2 and 12 weeks postadmission. However, no group differences in parenting stress were observed at 2 weeks postoperation. At 12 weeks postadmission, participants in the interval condition demonstrated significant impairment in both frequency and difficulty of problems contributing to parenting distress.

Conclusion: Families experience significant parenting distress related to the child's functioning and disruption in the child's quality of life that may be because of the delay in fully resolving the child's medical condition. In addition, parents experience negative consequences to their own stress as a result of the delay before the child's appendectomy.

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We previously reported that the results of a prospective randomized clinical trial comparing immediate laparoscopic appendectomy with initial nonoperative management and

interval appendectomy demonstrated relative equivalence of the 2 strategies, with no differences in total hospitalization, recurrence of abscess, and total hospital charges [1]. These results suggest that, with adequate resources, the decision to apply either treatment of perforated appendicitis with abscess may be made on an individual basis. However, each

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approach has costs and benefits beyond immediately measurable health outcomes that may tip the balance more clearly in favor of one arm. Children receiving interval appendectomy have an extended duration of treatment compared with those who undergo immediate appendectomy. These differences associated with the interval treatment approach may have psychosocial costs to the child and family including detrimental effects on school and work attendance, participation in social activities with peers, perception of health, and other quality of life (QOL) areas. In an effort to better understand the potential psychosocial costs associated with these 2 strategies for perforated appendicitis with abscess, we collected information regarding QOL. In this article, we report the results of surveys on parent-reported child QOL and self-reported parenting stress from this trial.

1. Method

Approval for the current study was obtained from Children's Mercy Hospital Internal Review Board (06 11-164) before approaching patients for participation. Patients older than 7 years who presented with perforated appendicitis with abscess were enrolled after obtaining parental permission. Child assent was obtained for patients older than 7 years and cognitively capable of participating in the assenting process. The study was registered with clinicaltrials.gov at the beginning of enrollment (NCT 00414375).

1.1. Participants

Patients were sampled from a population of children younger than 18 years who presented with perforated appendicitis with a well-formed abdominal abscess as determined by computed tomography. Patients were excluded from the study if they had other conditions that could limit recovery.

1.2. Measures

1.2.1. Quality of life

The Pediatric Quality of Life Scale–Version 4.0 (PedsQL) is a reliable and valid 23-item questionnaire that measures parent report of child health-related QOL in the preceding month [2]. Items can be recoded from 100 to 0 on 25-point intervals and averaged to produce a total score ($\alpha = .90$). The total score is derived from items that assess the child's physical (eg, problems with low energy or difficulty lifting something heavy), emotional (eg, feeling afraid, angry, or scared), social (eg, problems with getting teased or other children not wanting to be friends), and school functioning (eg, problems paying attention in class or missing school). Higher scores indicate better QOL.

1.2.2. Parenting stress

The Pediatric Illness Inventory (PIP) is a 42-item scale completed by parents that is designed to assess parenting stress associated with the illness of a dependent child in the preceding 7 days [3]. The PIP has demonstrated good reliability and validity. The measure yields a total frequency score ($\alpha = .95$) and a total difficulty score ($\alpha = .96$). These scores are derived from items that assess problems with communication (eg, arguing with family member or speaking with physician), emotional functioning (eg, feeling numb or learning upsetting news), medical care (eg, helping with medical procedures), and role function (being unable to go to work or feeling uncertain about disciplining child). Higher scores on the PIP indicate more parenting stress and are correlated with higher scores on other measures of parent self-reported anxiety and parenting stress.

1.3. Procedures

After obtaining Internal Review Board approval, 40 patients presenting with a perforated appendicitis and a well-formed abscess were randomized to immediate laparoscopic appendectomy vs aspiration of the abscess with or without drain placement, 2 weeks of intravenous antibiotics, and scheduled laparoscopic appendectomy approximately 10 weeks following original admission. Parents were asked to complete child QOL and parenting stress ratings at presentation; at 2 weeks postadmission, but after discharge; and at approximately 12 weeks postadmission (2 weeks postoperation for the interval appendectomy group). The full protocol is previously reported [1].

1.4. Data analysis plan

Because of difficulties with collection of follow-up data, the current investigation is limited by missing data (33%), which were not different between groups. These resulted in some of the analyses for the 2 follow-up assessments being too small to detect a significant effect. Given the small samples and the unique nature of examining QOL as an outcome for guiding selection of intervention strategies, statistical effects reaching $P < .05$ were considered significant, whereas $P < .10$ were considered trends that require further investigation. Where appropriate, effect sizes are provided to better communicate the magnitude of each effect. All effect sizes were converted to Cohen d to allow comparisons of individual effect sizes. Cohen provided guidelines for interpreting the d effect size as follows: .20 to .49 as small, .50 to .79 as medium, and .80 and above as large [4].

1.4.1. Group equivalence at baseline

Despite randomly assigning children to condition, some statistical differences were noted between the 2 groups at baseline. To ensure that only variance at time 2 and 3 was captured in model significance tests and to maximize ability

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