Journal of Pediatric Surgery (2008) **43**, 92–96

ELSEVIER

Journal of Pediatric Surgery

www.elsevier.com/locate/jpedsurg

Smaller scars—what is the big deal: a survey of the perceived value of laparoscopic pyloromyotomy

Ramanath N. Haricharan, Charles J. Aprahamian, Traci L. Morgan, Carroll M. Harmon, Keith E. Georgeson, Douglas C. Barnhart*

Division of Pediatric Surgery, University of Alabama at Birmingham, Birmingham, AL 35233, USA

Received 28 August 2007; accepted 2 September 2007

Index words:
Hypertrophic pyloric stenosis;
Laparoscopic surgery;
Scar;
Outcome measure;
Willingness to pay;
Children

Abstract

Purpose: Laparoscopic and open pyloromyotomies are equally safe and effective, with the principal benefit of laparoscopy being better cosmesis. The goal of this study was to measure the perceived value of laparoscopic pyloromyotomy.

Methods: Four hundred sixteen subjects (177 college freshmen, 126 first-year medical students, and 101 parents) were asked to complete a questionnaire after photographs of mature pyloromyotomy (open and laparoscopic) scars were shown to them. To measure the perceived value, subjects' willingness to pay hypothetical additional out-of-pocket expenses for their preferred operation was assessed. Data were analyzed using Cochran-Mantel-Haenszel test, *t* test and multivariable regression.

Results: Four hundred four surveys were complete. Overall, 74% preferred the appearance after laparoscopy. Eighty-eight percent would pay an additional out-of-pocket amount for their daughter and 85% for their son to have the cosmetic outcome after laparoscopy. Respondents were willing to pay more for their daughters ($P < .0001$) and sons ($P < .0001$) than themselves. As expected, income level ($P < .0001$) influenced the willingness to pay, whereas ethnicity, education, number of children, and sex did not.

Conclusions: The cosmetic benefit of laparoscopic pyloromyotomy was valued by a wide demographic with 85% being willing to pay additional expenses for their children to have smaller scars.

Hypertrophic pyloric stenosis is one of the most common surgical diseases in infants, affecting approximately 2 to 5 infants per 1000 live births [1-3]. The standard treatment has been a pyloromyotomy, using either a laparotomy or, more recently, a laparoscopic approach.

Since the initial report of laparoscopic pyloromyotomy in 1991 [4], several studies have compared the outcomes after open and laparoscopic operative techniques [5-15], including a recent randomized controlled trial [3]. These studies concluded that there was no significant difference in the complication rates and that both techniques were equally safe in experienced hands [3,9-11,15].

Advantages of the laparoscopic approach, including superior cosmetic results, have been reported in the pediatric surgery literature [3,5,6,8,9]. However studies evaluating the perceived value of the superior cosmetic result have been scarce. The purpose of our study was to assess the value of the appearance after laparoscopic pyloromyotomy, as perceived by the public. This was done using a contingent

Presented at the 38th annual meeting of the American Pediatric Surgical Association, Orlando, Florida, May 24-27, 2007.

* Corresponding author. Tel.: +1 205 939 9688; fax: +1 205 975 4972.
E-mail address: doug.barnhart@ccc.uab.edu (D.C. Barnhart).

0022-3468/$ – see front matter © 2008 Elsevier Inc. All rights reserved.
doi:10.1016/j.jpedsurg.2007.09.026

Table 1 Sample questions from the survey questionnaire used to assess the value of perceived cosmesis

Please refer to the photographs that are displayed. These photographs show the typical appearances in children who were operated on for pyloric stenosis as a baby. Which appearance do you prefer?	Operation A Operation B
Please refer to the photographs that are displayed. How important to you is the difference in appearance?	Very important Important Somewhat important Not important at all
Imagine that *you* had pyloric stenosis as a baby. If the operation which provides the appearance that you chose was more expensive, how much *extra* do you think your parents *should have been willing* to pay for you to have that operation?	Nothing extra <$100 extra $100-$250 extra $250-$500 extra $500-$1000 extra >$1000 extra
Imagine that you had a *daughter* with pyloric stenosis. If the operation which provides the appearance that you chose was more expensive, how much would you pay *out of pocket* for your daughter to have that operation?	Choices as above
Imagine that you had a *son* with pyloric stenosis. If the operation which provides the appearance that you chose was more expensive, how much would you pay *out of pocket* for your son to have that operation?	Choices as above
Please choose the range that best describes your family's annual income.	<$15 000 $15 000-$25 000 $25 000-$50 000 $50 000-$100 000 >$100 000

valuation technique using the willingness-to-pay method to estimate the perceived value of the preferred operative technique [16].

1. Methods

After institutional review board approval, photographs of the surgical scars of children who underwent either open or laparoscopic pyloromyotomy at least 5 years before the study were taken. Patients used for photographs were selected based on a convenience sample and were selected before knowledge of the appearance of their scars so as to avoid selection bias by the investigators. The photographs of the first 2 patients that were identified in each group were used as representative scars for the comparison of cosmetic outcome during the administration of the survey.

In order to obtain responses across a wide demographic, a convenience sample of three populations were solicited to participate in the survey: parents of children seen in the emergency room or outpatient clinics at the Children's Hospital of Alabama, Birmingham, college freshmen at the University of Alabama at Birmingham (UAB) and first-year medical students at UAB. A brief description of hypertrophic pyloric stenosis and its treatment was given to everyone who agreed to participate in the survey. In addition, they were informed that both open and laparoscopic operations were safe and effective in experienced hands and that there were no significant differences between the complication rates, time to feed, or length of hospital stay. Representative photographs illustrating the scars after open and laparoscopic operations were shown to the respondents, and they were asked to complete a 12-question survey (sample questions in Table 1). To measure the perceived value of the cosmetic benefit, subjects were presented hypothetical situations of additional out-of-pocket expenses for their preferred operation. Hypothetical scenarios were presented where the respondent, the respondent's son, or the respondent's daughter was the patient undergoing the operation.

Demographic and socioeconomic data were also collected. Data were analyzed using Cochran-Mantel-Haenszel test, paired *t* test, analysis of variance, and multivariable regression.

2. Results

The survey was administered to a total of 416 subjects, with 404 providing adequate data to allow analyses. The

Table 2 Demographics and preferences of the population surveyed

	Total N	Prefer laparoscopic approach	
		n	%
Groups			
Parents	101	87	86%
First-year medical students	126	104	83%
College freshmen	177	109	63%
Sex			
Female	256	187	73%
Male	148	112	76%
Ethnicity			
White	262	205	78%
African American	97	64	66%
Asian	25	16	64%
Others	20	15	75%
Family income per annum			
<$15 000	57	41	72%
$15 000-$25 000	40	31	78%
$25 000 to $50 000	90	63	70%
$50 000-$100 000	103	79	77%
More than $100 000	90	69	77%