

## LAPAROSCOPIC CHOLECYSTECTOMY IN CHILDREN – PRELIMINARY EXPERIENCE

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### Abstract

**Introduction.** Gallstone is a common disease in adults especially in fat people and is rarely seen in children. The aim of this study is to present our preliminary experiences and outcomes in pediatric laparoscopic cholecystectomy.

**Materials and methods.** The first 18 gallstones patients operated in the Pediatric Surgery Department of the Clinical Emergency Hospital for Children “Louis Turcanu” Timisoara – Romania were analyzed between (January 2013 - present). Data was collected on age, weight, gender, Body Mass Index (BMI), comorbidities, time of surgery, number of ports used, using of drain and antibiotics.

**Results and discussions.** The study included 14 females and 4 males patient with age ranging from 2-17 years (mean 12.7). The weight of the patients ranged between 12-73 kg (mean 49.9) with BMI ranging between 16.8-28.2 (mean 21.3). Three patients were overweight, however obesity and morbid obesity was absent in this cohort. With regards to the pathology: : 2 patients presented hypercholesterolemia, 1 patient had anemia, 1 patient cystitis, and another presented muscular dystrophy with 13 patients having no associated pathology. Out of the whole lot of patients 4 patients presented cholecystitis and one associated jaundice. In 8 patients a 3-port technique was used, while a 4-port procedure was preferred in 10 patients. Drains were placed and antibiotics administered in all patients. The most commonly used antibiotic was Ampicillin. Mean number of postop days was 4.41.

**Conclusions.** Interesting in our cohort was that obesity did not play a role in gallstones. Technical skills were improved during our learning curve in cholecystectomy. Our data was comparable to most other series in their learning curve.

**Key words:** gallstone, children, laparoscopic cholecystectomy

### Introduction

Gallstone is a common disease in adults especially in overweight people and is rarely seen in children. Lately gallbladder disease has become a very common problem in children and young adolescents. Over the past 15 years the

age of the pediatric patients with gallbladder disease has been gradually decreasing.<sup>1</sup> Historically, gallbladder disease has been frequently diagnosed in children with hemolytic cholelithiasis.

Now gallstone and biliary dyskinesia are often seen in children. These patients often present atypical symptoms, but they can also have a spectrum of symptoms that are found with gallbladder disease (right upper abdominal pain, nausea, vomiting).<sup>1</sup> It is defined by a completely normal gallbladder on imaging tests, typically ultrasound; and decreased gallbladder contraction in response to a pharmacological stimulus. Unlike other functional gastrointestinal disorders that are treated with behavioral therapy, medications, and/or dietary modification, current clinical practice has accepted cholecystectomy as the treatment of choice.<sup>2</sup>

### Aim

To present our preliminary experiences and outcomes in pediatric laparoscopic cholecystectomy.

### Materials and methods

The first 18 gallstones patients operated in the Pediatric Surgery Department of the Clinical Emergency Hospital for Children “Louis Turcanu” Timisoara – Romania were analyzed during January 2013 – September 30<sup>th</sup> 2015. Data was collected on age, weight, gender, Body Mass Index (BMI), comorbidities, time of surgery, number of ports used, using of drain and antibiotics and mean postoperative stay.

### Results

The study included 14 females and 4 male patients with age ranging from 2-17 years (mean 12.7). Most frequently affected were those between: ages 10 to 16 (figure 1).

The weight of the patients ranged between 12-73 kg (mean 49.9) with BMI ranging between 16.8-28.2 (mean 21.3) (figure 2). We found that 2 patients were underweight, 13 were normal weight, 3 being overweight, however obesity and morbid obesity was absent in this cohort.

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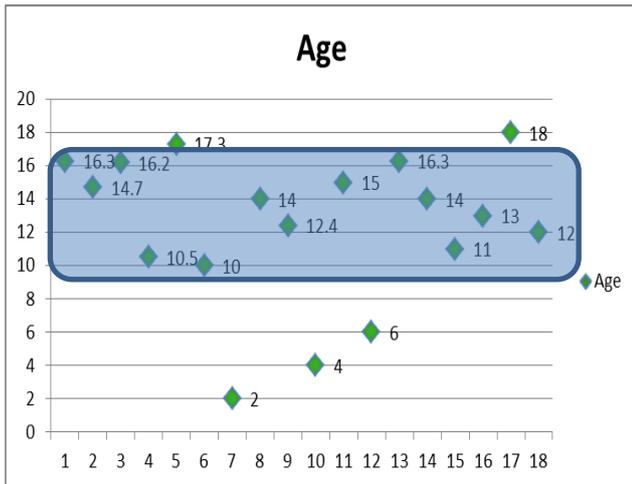


Figure 1. Case distribution according age.

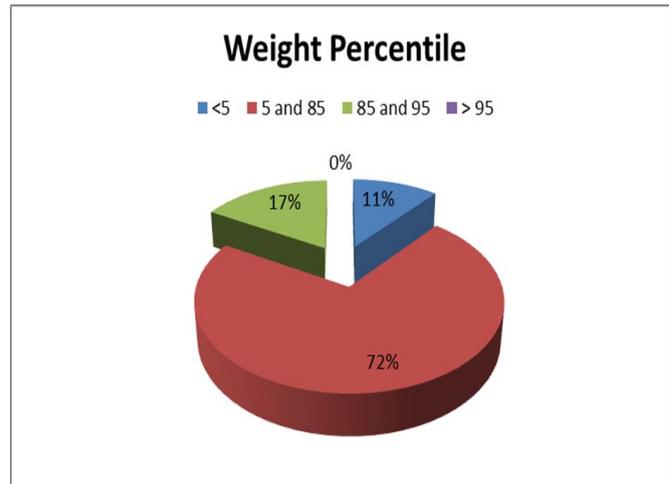


Figure 2. Case distribution according weight.

**Discussions**

Our study has shown a clear predominance of the female sex compared to males (14:4) unlike other similar studies published where there were 14 females to 10 males<sup>3</sup>. Immediate post-operative evolution by Espinosa-Saavedra D which found a 66.7 % female predominance<sup>4</sup> and another study in which the ratio was 8 males to 10 females.<sup>5</sup> However one recent study, published by Kim, mentioned a similar obvious predominance of the female sex,<sup>6</sup> similar to our findings.

The age ranged from ages 2-18 with a mean of 12.3, similar to those in the literature.<sup>4,6</sup>

The weight of the patients range from 12 kg-71 kg with a mean of 49.9 kg. The Body Mass Index or BMI ranged from 16.8-28.2 with a mean of 21.3. Most of our patients had normal bodyweight with no obese patients. 17% (3 patients) of the patients were overweight.

In our clinic we used 3 and 4 port technique for laparoscopic cholecystectomy. The latest trend is the single incision or single port cholecystectomy in children. Durring the last 5 years several centers have used this technique with similar results, comparable to the 3 or 4 port techniques. An article published in Am Surg. 2015 Sep by Farach SM et al. has done a retrospective review of 151 patients who underwent this procedure between 2009-2013 and have seen a decrease in operative time, only had 5 conversions, concluding that SILC can be safely introduced into a pediatric surgical practice.<sup>7</sup> A team of doctors in Africa found a new alternative to the SIPES in developing countries which performed the single-port surgery in children using an improvised trans-umbilical glove-port with conventional rigid instruments. They used a homemade trans-umbilical port consisted on: A flexible ring, a rigid larger ring, one powder-free surgical glove, a wire-to-skin and standard standards laparoscopic trocars. They found it is feasible, safe and effective. It may be an alternative to the costly commercially available single-port systems especially in a developing country.<sup>8</sup> Another team has been using single incision technique for the past 5 years published

recently, who described the technique as safe with a complication rate of 6% concluding that operative times and complication rates are comparable to those in prior reported multiport laparoscopic series, allowing safe integration of SIPES into the routine of a surgical practice for most common procedures.<sup>9</sup> Despite SILS is a more challenging technique to perform, it is a safe and feasible alternative for cholecystectomy in children as all studies reviewed conclude.<sup>10</sup>

The duration of the surgical intervention varied between 60-165 min with a mean of 105 min. A study published in 2014 by a Spanish compared 39 children to 40 adults who underwent laparoscopic cholecystectomy. The mean operating time was significantly higher among children (127 min, adults 71 min, p < 0.01) but there were no differences neither in conversion nor in complication rates (children 5% and 7.7%, adults 2.5% and 15% respectively).<sup>11</sup>

All of the patients in our lot, except one, had drainage and antibiotics, mostly prophylactically.

The mean number of postop days was 4.41 for our patients. However the trend is for same day discharge as mentioned by Dalton et al. They conclude that same day discharge appears safe for pediatric patients undergoing laparoscopic cholecystectomy. The main obstacles to discharge were time of surgery completion and clinical care habits.<sup>12</sup> Zeidan et al published a paper in 2014 in which the median postoperative hospital stay was 1 day, concluding that in the study they conducted laparoscopic cholecystectomy in the pediatric population resulted in short postoperative hospital stay and had low complication rates. In particular, zero bile duct injuries were noted.<sup>13</sup> Another paper states that day case laparoscopic cholecystectomy is feasible and safe for children. Emphasis on adequate pain management and avoidance of postoperative nausea and vomiting results in a high rate of day case surgery equivalent to that achieved in adult practice.<sup>14</sup>

We had almost no complications during surgery, except for one case that required conversion

Espinosa-Saavedra et all. mentions that biliary lithiasis is a disease that is rarely diagnosed in children; in Mexico, its prevalence is less than 1 %, it occurs more frequently in adolescent females, hemolytic causes are rare and in most cases no cause was identified. More epidemiological studies are needed in order to understand the natural history of the disease in children.<sup>15</sup>

### Conclusions

Interestingly in our cohort obesity did not play a role in gallstones. Most of our patients didn't present comorbidities. We had almost no complications during

surgery, except for one case which required conversion due to bleeding and technical difficulties. In our clinic laparoscopic cholecystectomy is gold standard treatment for gall stones and biliary dyskinesia. More epidemiological studies are needed in order to better understand gallbladder disease in children. Despite SILS is a more challenging technique to perform, it is a safe and feasible alternative for cholecystectomy in children. Day case laparoscopic cholecystectomy is feasible and safe for children. Emphasis on adequate pain management and avoidance of postoperative nausea and vomiting should be considered.

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