

Original Article

Experience of Resection of Colorectal Polyps in Children

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Key Words

Colorectal polyps;
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Purpose. Polyps are the most frequently seen benign tumors of the colon and rectum in children. Removal of polyps will help to (1) ease patient and/or patient family's anxiety, (2) avoid massive bleeding following autoamputation. This is a retrospective analysis of a single surgeon's experience of resection of colorectal polyps in children in a period of 30 years.

Materials and Methods. A total of 212 polypectomies for 209 children were performed in 30 years by a single surgeon. There were 129 boys and 80 girls. Age ranged from one to 16 years old, with an average of 6.32 years old. One-hundred and sixty-three patients had rectal polyps, 40 patients had colonic polyps, and six patients had polyposis coli.

Results. Three children had recurrent rectal polyps which necessitate second polypectomies. Two-hundred patients had juvenile polyps in the specimen, but three patients had adenomatous polyps, and six patients had adenomatous or juvenile polyposis. Fifty-three children also had colonoscopy examinations. Seventy-four procedures were performed under general anesthesia, however, 138 procedures were performed only with sedation. Two cases of bleeding occurred following polypectomies, stop bleeding by electrocoagulation were necessary.

Conclusion. This experience suggests that polypectomy of colorectal polyps in children can be performed safely with appropriate preparation and meticulous technique.

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Colorectal polyps are common during childhood and affect 1.1% of the childhood population. More than 90% of these are juvenile polyps, and the majority of juvenile polyps occur in the rectosigmoid region. Most polyps are asymptomatic and remain unrecognized. In symptomatic cases, juvenile polyps usually present with painless, intermittent, and fresh rectal bleeding with or without associated symptoms, such as recurrent abdominal pain and prolapse

through the anus.^{2,3} Juvenile polyp is generally solitary and have been traditionally considered to have little or no malignant risk. However, multiple juvenile polyps as polyposis coli are known to have higher risk of adenomatous change and development of malignancy.^{4,5}

Removal of polyps will help to ease patient and patient family's anxiety and avoid massive bleeding following autoamputation. However, children are not likely to be cooperative during polypectomy without

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anesthesia, which might increase risk of polypectomy. The aim of this study was to evaluate a single surgeon's experience of resection of colorectal polyps in children for safety of the procedure, necessity of general anesthesia and complications of the procedure.

Materials and Methods

The study used the Mackay Memorial Hospital (MMH) administrative database of colorectal surgery and we identified all children who had undergone resection of colorectal polyps from January 1984 to December 2014. The principle of managing of colorectal polyps in children was: no routine colonoscopy or barium enema examination since most of polyps were located at the rectum, sedation only without general anesthesia was preferred during polypectomy, and suture of the base of polyp was preferred when possible. Demographic data including age, gender, type of anesthesia, use of simultaneous colonoscopy, location and histopathology of colorectal polyps, as well as complication of procedure were analyzed.

Results

From January 1984 to December 2014, a total of 212 polypectomies for 209 children were performed in 30 years by a single surgeon (TCH). There were 129 boys and 80 girls (M:F ratio 1.6:1). Age ranged from one to 16 years old, with an average of 6.32 years old. Painless rectal bleeding was the most common symptom. Seventy-four procedures were performed under general anesthesia, however, 138 procedures were performed with sedation only, which means that 65% of procedures were performed without general anesthesia (Table 1). Fifty-three children also had simultaneous colonoscopy examinations.

Table 1. Types of anesthesia during polypectomy

Anesthesia	Number of patients	%
General	74	35
Sedation	138	65

Only 25% of patients in the series had colonoscopy performed. One hundred sixty-three patients had rectal polyps (78%), 40 patients had colonic polyps (19%) and 6 patients had polyposis coli (3%) (Table 2). Histopathological examination of 209 patients was available for analysis. Most of the pathology were juvenile polyps. There were 200 juvenile polyps and 3 adenomatous polyps. Six patients had polyposis coli (Table 3). Three children had recurrent rectal polyps which necessitate second polypectomies. Two children had post polypectomy bleeding which necessitate electrocoagulation for bleeding control. No colonic perforation occurred in any patients in this series (Table 4).

Discussion

Most of colorectal polyps in children are juvenile polyps and account for 93% of all polyps of the gastrointestinal tract.⁴ Juvenile polyps have been reported to be more common in boys than in girls.⁵⁻⁷ However, some series reported the same prevalence rate in both genders.³ The generally known trend is that juvenile polyp is common in children of age between 2 and 10 years and the mean age at the time of diagnosis is known to be 5-7.4 years,⁸ with the ten-

Table 2. Location of colorectal polyps in children

Location	Number of patients	%
Rectum	163 (78%)	78
Colon	40 (19%)	19
Polyposis coli	6 (3%)	3

Table 3. Pathology of colorectal polyps in children

Pathology	Number of patients	%
Juvenile	200	95.6
Adenomatous	3	1.4
Polyposis coli	6	3

Table 4. Complications of polypectomy

Complications	Number of patients	%
Bleeding	2	0.9
Perforation	0	0

dency of solitary juvenile polyps occurring at earlier ages as compared to children with multiple polyps or juvenile polyposis.⁷ It is rare in children of age under 1 year and over 15 years.^{2,4,8,9} 95.6% of colorectal polyps were juvenile polyps in this series. The prevalence ratio between males and females was 1.6:1 and the mean age at diagnosis was 6.3 years with age ranged from 1 to 16 years. Juvenile polyps have a natural tendency to disappear and autoamputate in late childhood.¹⁰ In order to avoid massive bleeding following autoamputation of polyps, polypectomy should be performed when diagnosed.

The term 'juvenile' refers to the type of polyp and not the age of onset of the polyp.¹¹ Juvenile polyp is a bright red, smooth, glistening sphere. Histologically, the typical juvenile polyp has a distinctive cystic architecture, mucus-filled glands, a prominent lamina propria and dense infiltration with inflammatory cell.¹¹ They are sometimes referred to as "retention" or "inflammatory" polyps. Classically, juvenile polyps are considered to be benign. However, the incidence of adenomatous change in solitary juvenile polyps is 2-3% in reported series. It is 1.4% in this series.⁴

It generally has been accepted that 90% of juvenile polyps are solitary and located in the rectum or sigmoid colon.^{4,8} Therefore, routine colonoscopy examination was not regularly performed for every child. Some previous series have shown that 53-58% of polyps were multiple and 30-60% are proximal to the sigmoid colon with introduction of fiberoptic colonoscopy. However, in both studies the number of children was small.^{3,9} Numerous juvenile polyps in the colon and rectum indicates the presence of juvenile polyposis.¹² Presence of multiple juvenile polyps in juvenile polyposis is associated with an increased risk of gastrointestinal malignancy.¹³ The reported incidence of adenomatous changes in this condition was as high as 47%.¹⁴ In view of the risk of malignancy, this group of children requires surveillance colonoscopy 2-3 times per year, after their colons are cleared of polyps.⁴ 78% of polyps were located in the rectum, 19% of polyps were in the colon and 3% of children had diagnosis of juvenile polyposis in this series. That is, 97% of cases had solitary polyps. Actually, only 25% of patients had undergone simultaneous colo-

noscopy in this series.

In children, juvenile polyps usually present with painless, intermittent, and fresh rectal bleeding with or without associated symptoms, including recurrent abdominal pain and prolapse through the anus.^{2,4,8,9} In order to ease the anxiety from the patients' parents and avoid further bleeding, removal of juvenile polyps is preferred in all cases.⁴ However, children are not likely to be cooperative during polypectomy without anesthesia, which might increase risk of polypectomy. Therefore, routine use of general anesthesia during polypectomy was not mandatory. Our result revealed 65% of polypectomies was performed under sedation only. No cases of complications caused by the use of drugs for sedation had been reported.⁸ According to our experience, polypectomy under sedation only was feasible and advisable. But still, surgical technique is the most important in polypectomy.

Rectal polyps can be palpated by digital rectal examination and can be removed through the anus. For those that cannot be palpated, rigid rectosigmoidoscopy is a traditional and commonly used technique both for investigating and removing polyps.⁶ In some cases, we used two scope technique for the transrectal removal of lesions high in the rectum and sigmoid colon. Two scope technique has been used for complete removal, under direct vision and control, of mobile lesions of the rectosigmoid colon above the reach of the anoscope but within reach of the sigmoidoscope. Hemostasis may be easily controlled and maintained with suture ligation by two scope technique.¹⁵

The recurrence of juvenile polyps after polypectomy is rare. The recurrence of 9-17% of the previous studies^{3,16} compared with 1.4% in this series: three children had re-polypectomy for recurrent polyps. As for complications after polypectomy, the occurrence of bleeding was 5-14% in others and 0.9% in this series.⁸ In previous study, size and numbers of polyps, and skill level of procedure were independent risk factors for delayed bleeding after polypectomy.⁸ Furthermore, no perforation had occurred in this series. It emphasizes the importance of good surgical technique. Our low complication rate after procedure suggested resection of colorectal polyps in children was a safe procedure.

Conclusion

Juvenile polyps remain the most common colorectal polyps in children and majority of these are solitary and located in rectosigmoid colon. This experience suggests that polypectomy of colorectal polyps in children can be performed safely with appropriate preparation and meticulous technique. General anesthesia and colonoscopy examination is not always necessary in selected patients. Juvenile colorectal polyps should be removed when diagnosed, which not only will prevent further blood loss but may also ease the anxiety of the patient and families.

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原 著

切除孩童大腸直腸息肉的經驗

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目的 息肉為孩童最常見的大腸直腸良性腫瘤。移除息肉可以幫助 (1) 緩解病人及病人家屬的焦慮；(2) 避免息肉自我脫落造成的大量流血。這篇回顧性研究分析，主要是呈現過去過去三十年單一外科醫師對切除孩童大腸直腸息肉的經驗。

方法 從 1984 年 1 月到 2014 年 12 月，這三十年來共 209 位孩童執行了 212 次息肉切除術，手術都由同一位外科醫師執行。共計有男性 129 位及女性 80 位，平均年齡為 6.32 歲，年齡範圍為 1 到 16 歲。163 位病人有直腸息肉，40 位病人有大腸息肉，6 位病人有大腸息肉症。

結果 3 位病人因為直腸息肉復發需再次接受息肉切除，200 位病人的標本病理為青年性息肉，3 位病人為大腸腺瘤，6 位病人為腺性或青年性息肉症。53 位病人接受了大腸鏡檢查，74 個息肉切除過程在全身麻醉下進行，然而，138 個過程僅僅在鎮靜下進行。有 2 位病人在息肉切除後發生流血並且需要電燒來止血。

結論 在充分的準備及精細的技術下，切除孩童大腸直腸息肉是安全的。

關鍵詞 大腸直腸息肉、孩童、切除。