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EXPERIENCE FROM THE FIELD

Endoscopy and Procedures

Is it time to revisit the need for pediatric polypectomy guidelines?

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1 | INTRODUCTION

Gastrointestinal polyps vary in size and type and often require removal to relieve symptoms or prevent progression to malignancy. Polypectomy is a core component of pediatric gastroenterology, yet no formal guidelines exist for pediatric-specific techniques. This leaves current practices to rely on expert opinion, position papers on polyposis syndromes, and extrapolated adult data and endoscopy guidelines. However, significant differences between pediatric and adult polypectomy—such as polyp types and procedural approaches—highlight the need for dedicated pediatric guidance. Recommendations from groups like the American Society for Gastrointestinal Endoscopy emphasize the importance of pediatric-specific training and techniques,[1] but further research is needed to develop evidence-based guidelines tailored to children.

Recent adult studies comparing specific polypectomy modalities have driven large shifts in recommendations over the past few years. For instance, the U.S. Multi-Society Task Force on Colorectal Cancer guidelines were updated to recommend cold snare polypectomy (CSP) for small and diminutive polyps (<10 mm) due to its favorable safety profile compared to electrocautery techniques.[2] Building on these findings, interest is also growing in cold resection techniques for intermediate-sized (10–19 mm) nonpedunculated polyps.[3] These developments demonstrate the need to develop pediatric polypectomy guidelines, incorporating evidence from recent adult studies and pediatric-specific research to guide best practices.

This manuscript explores key differences between pediatric and adult polypectomy, outlines the current state of guidance, and calls for updated research to inform pediatric best practices. Central to this effort is the need for large-scale studies comparing polypectomy techniques in children to ensure safe, effective, and standardized care.

2 | ADULT POLYPECTOMY GUIDELINES

Understanding the gaps in pediatric polypectomy practices requires an exploration of the evolution of adult polypectomy techniques and how they could inform pediatric guidelines. Recent adult studies highlight

significant advancements in polypectomy methods. Traditionally, cold forceps were commonly used for removing diminutive polyps ≤5 mm in size. However, newer research has shown that CSP offers several advantages, including lower rates of incomplete resections, recurrence, and delayed bleeding compared to cold forceps. This shift is largely driven by CSP's ability to achieve more complete resections without increasing the risk of complications, even in flat or sessile polyps. Similarly, the use of hot biopsy forceps for diminutive polyps (≤5 mm) has rapidly declined due to its association with high incomplete resection rates, suboptimal histopathologic specimens, and increased complication rates.[2] Notably, hot forceps have never been recommended for polyps ≥6 mm.

Consequently, adult guidelines from the U.S. Multi-Society Task Force on Colorectal Cancer strongly recommend avoiding hot forceps and instead favor CSP for sessile polyps <10 mm. For intermediate-sized sessile polyps (10–19 mm), hot snare polypectomy (HSP) or CSP may be used, with or without submucosal injection or endoscopic mucosal resection (EMR). CSP is often preferred when cancer suspicion is low, as it avoids risks associated with thermal injury, including post-polypectomy syndrome, delayed bleeding, and delayed perforation, while also improving efficiency and preserving histologic quality.[2,4,5] EMR is the standard approach for removing large sessile polyps (>20 mm), ideally performed at a high-volume center.[2]

For pedunculated polyps, large adult studies support CSP for those <10 mm, as it significantly reduces delayed bleeding risk compared to HSP.[4,5] Large pedunculated polyps (≥10 mm), which are commonly encountered in pediatric practice, should be removed en bloc through the stalk using HSP to minimize the risk of immediate bleeding. When the polyp head is ≥20 mm or the stalk is thick, mechanical ligation is recommended to reduce the risk of delayed post-polypectomy bleeding.[2] These recommendations are supported by large-scale prospective studies, systematic reviews, and meta-analyses, providing strong evidence supporting the safety and efficacy of CSP.[2,4,5]

3 | PEDIATRIC POLYPECTOMY RECOMMENDATIONS

Official guidelines for pediatric polypectomy techniques have not been established, leaving current practices reliant on expert opinions.[6,7] These practices are largely extrapolated from adult data and remain influenced by older methods developed before the widespread adoption of advanced techniques like CSP and EMR. Individual practices are also dependent on experiences obtained during fellowship training and subsequent clinical experiences, and many pediatric endoscopists lack training in CSP, limiting fellow exposure. The European Society for Paediatric Gastroenterology, Hepatology, and Nutrition provides position papers for polyposis syndromes from 2019, including familial adenomatous polyposis (FAP), Peutz–Jeghers syndrome (PJS), and juvenile polyposis syndrome (JPS), which also provide guidance on polypectomy practices.[8–10]

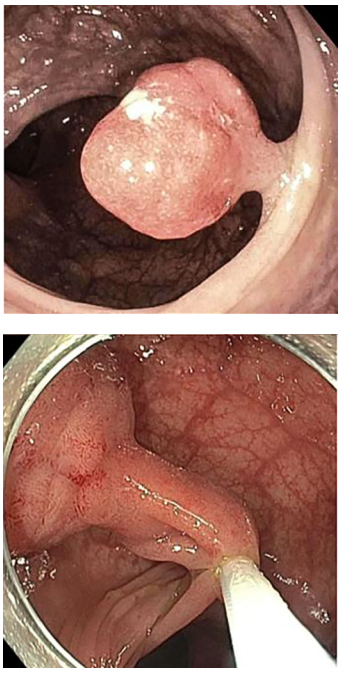
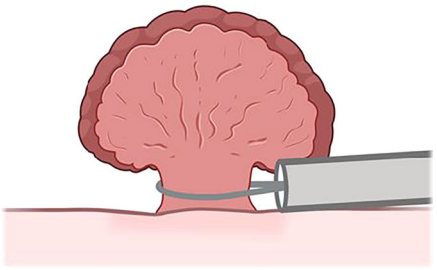
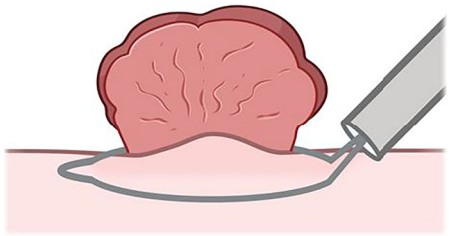
In pediatric practice, cold forceps are frequently used for diminutive polyps ≤3 mm, with CSP as an alternative. Sessile polyps measuring 4–10 mm are typically removed using CSP or HSP. For polyps >10 mm, HSP is generally preferred, with EMR, endoscopic submucosal dissection (ESD), or surgical resection considered depending on polyp characteristics. Pedunculated polyps are typically removed using HSP, with bleeding prophylaxis suggested for polyp heads ≥20 mm or stalks ≥10 mm.[6,7] Operator familiarity and exposure remain barriers to widespread adoption of CSP, though CSP is gaining traction.[7,11] A recent study demonstrated that CSP is a safe and effective option for pediatric patients with polyposis, achieving a high rate of complete tissue retrieval (94%) and a low incidence of significant complications—primarily immediate bleeding managed successfully during the procedure.[11]

Advancements in endoscopic techniques have expanded polypectomy options in children. Saline-assisted polypectomy or EMR can be used to elevate sessile polyps for resection,[6] with EMR demonstrating high technical and clinical success rates and a low complication rate in recent pediatric studies.[12] ESD is technically demanding, requires significant expertise, and is rarely needed in pediatric cases, typically reserved for large sessile polyps with malignant potential.[6] Despite these advancements, clear gaps remain in comparative studies of polypectomy techniques in children and in addressing the additional training needed for CSP and EMR. Limited access to pediatric polypectomy procedures, variability in technique among endoscopists, and the scarcity of pediatric-specific data continue to hinder the development of standardized, evidence-based guidelines.

4 | DIFFERENCES BETWEEN PEDIATRIC AND ADULT POPULATIONS

Pediatric and adult populations differ significantly in the characteristics and management of polyps (Table 1). In children, most polyps are benign juvenile polyps, typically pedunculated and richly vascularized. This vascularity may limit the applicability of adult CSP data for small pedunculated polyps as adenomas are generally less vascular. Adults more commonly present with sessile polyps, which have a higher likelihood of being

TABLE 1 Comparison of pediatric and adult polypectomy.

Category	Pediatric polypectomy	Adult polypectomy
Guideline availability	No formal guidelines; relies on adult data and expert opinion	Established guidelines (U.S. Multi-Society Task Force and ESGE)
Most common type of polyps[a]	Juvenile (pedunculated, inflammatory, and hamartomatous)	Adenomatous (sessile and neoplastic)
Endoscopic examples	Pedunculated polyp and HSP 	Sessile polyp and CSP 
Polypectomy illustration	Hot snare technique 	Cold snare technique 
Primary indications for endoscopy	Symptom-driven (rectal bleeding, abdominal pain, and polyposis syndromes)	Screening-driven (colorectal cancer prevention)
Current polypectomy practices	Sessile polyps: • ≤3 mm—Cold forceps or CSP • 4–10 mm—CSP/HSP • >10 mm—HSP (consider EMR, ESD, or surgical resection) Pedunculated polyps:	Sessile polyps: • <10 mm—CSP • 10–19 mm—HSP/CSP ± EMR • ≥20 mm—EMR Pedunculated polyps:

(Continues)

TABLE 1 (Continued)

Category	Pediatric polypectomy	Adult polypectomy
	• <20 mm—HSP • ≥20 mm head or ≥10 mm stalk – HSP with bleeding prophylaxis	• <10 mm—CSP/HSP (CSP favored in recent studies) • ≥10 mm—HSP • ≥20 mm head or thick stalk—Consider mechanical ligation
EMR	For larger sessile polyps; limited pediatric data	Standard for ≥20 mm polyps; strong supporting evidence
ESD	Rarely needed; for select cases with malignant potential	Used selectively for complex, high-risk lesions
Training and exposure	Less exposure to CSP/EMR; lower complex case volume	Routine training in advanced techniques
Evidence base	Limited pediatric studies (mostly observational or case series)	Strong RCTs and meta-analyses inform practice
Future research directions	Comparative studies of forceps, CSP, and HSP; further application of EMR	Continued advancement in training techniques and AI-assisted detection

Note: Diagram Credit: BioRender. Hoskins, BJ. 2025. https://biorender.com/k65t401.

Abbreviations: AI, artificial intelligence; CSP, cold snare polypectomy; EMR, endoscopic mucosal resection; ESD, endoscopic submucosal dissection; ESGE, European Society of Gastrointestinal Endoscopy; HSP, hot snare polypectomy; RCT, randomized controlled trial.

[a]Both pedunculated and sessile polyps are seen in children and adults.

dysplastic or adenomatous, and progressing to colorectal cancer. Pediatric patients can also develop adenomatous polyps, either as isolated cases or in the context of polyposis syndromes such as FAP, making it essential for pediatric endoscopists to be adept at identifying, characterizing, and removing adenomas and other sessile polyps.[6] Given their predominantly benign, hamartomatous histology and thinner bowel walls, pediatric polyps—particularly in JPS and PJS—do not require as wide-margin resection as in adults, and techniques should prioritize complete removal with minimal tissue injury.[9,10]

The most common clinical indications for colonoscopy also differ between children and adults. In adults, it is often performed for colorectal cancer screening and prevention, whereas in children, it is more commonly indicated for symptoms such as rectal bleeding or for polyposis surveillance. In both populations, polypectomy is performed when polyps warranting removal are found. Furthermore, in adults, there has traditionally been a focus on achieving deeper resections, often using electrocautery, to ensure complete removal of adenomas due to their higher potential for progression to colorectal cancer.[6] However, an increasing number of polyps, including adenomas, are now being removed using CSP, which has not been shown to increase the risk of incomplete resection or cancer progression.

5 | ADDRESSING GAPS AND ADVANCING CARE

The absence of robust, evidence-based guidelines for pediatric polypectomy remains a major challenge. No studies have directly compared the safety and efficacy of various polypectomy techniques—such as cold forceps, hot forceps, cold snare, and hot snare methods—in children. As a result, pediatric practices often rely on extrapolated adult data, despite key differences in patient populations. While adult guidelines now discourage cold forceps, hot forceps, and HSP for polyps <10 mm,[2] these shifts have yet to be fully validated or adopted in pediatrics.

A further gap is the limited exposure to CSP and advanced techniques like EMR in pediatric practice. The relatively low frequency of large or complex sessile polyps in children makes it challenging for endoscopists to achieve and maintain proficiency. As guidelines evolve, integrating new techniques into trainee and faculty education via simulation, hands-on workshops, and enhanced fellowship curricula will be essential, drawing from successful adult models. Notably, the adoption of CSP may even influence surveillance strategies in polyposis syndromes, potentially shifting the timing and approach to polyp removal.

Closing these gaps will require collaborative, multicenter studies directly comparing pediatric polypectomy techniques. Key outcomes should include resection success, complications, and feasibility, with attention to pediatric-specific factors like polyp type, patient age, and access to specialized equipment and training. Long-term outcomes—such as recurrence and the need for repeat procedures—are also critical to assess technique durability and effectiveness. Prioritizing this study will support the development of evidence-based guidelines for safe and effective pediatric polypectomy.

6 | CONCLUSION

Polypectomy is central to pediatric endoscopy, yet evidence-based, pediatric-specific guidelines are lacking. Current practices rely on clinical experience and

adult data, which may not reflect pediatric needs. Techniques like CSP and EMR show promise but require further validation in children.

Multicenter studies are needed to compare techniques, assess outcomes such as resection success and complications, and evaluate long-term results. Collaborative research will help establish tailored, evidence-based approaches and improve care for pediatric patients.

CONFLICT OF INTEREST STATEMENT

Brett J. Hoskins—Consultantship: Mirum Pharmaceuticals, Inc. and 3-D Matrix, Inc. Research Support: Travere Therapeutics, Inc. and Mirum Pharmaceuticals, Inc. Douglas K. Rex—Consultantship: Aries Pharmaceuticals, Inc., Boston Scientific Corporation, Olympus Corporation, Braintree Laboratories, Inc., Sebela Pharmaceuticals, Inc. Research Support: Boston Scientific Corporation, Sebela Pharmaceuticals, Inc., Medtronic plc, Olympus Corporation, Erbe Elektromedizin GmbH Ownership Interest: Satisfai Health Inc. Kenneth Ng declares no conflicts of interest.

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