



## Case Report

# Hyperplastic polyps after surgical management of Hirschsprung's disease in children treated with argon plasma coagulation: Case report

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## ABSTRACT

**Introduction and importance:** The argon plasma coagulation is a technique used for noncontact thermal coagulation of tissue. Hyperplastic polyps are the most common non-neoplastic polyps in the colon.

**Case presentation:** We presented a 3-year-old girl with a chief complaint of bloody stool and rectal tenesmus that began 5 days ago. She was previously being treated because of a history of chronic constipation. She underwent a one stage surgery for Hirschsprung's disease, after a full-thickness rectal wall biopsy was obtained and it consistent with Hirschsprung's disease. Three months after the surgery, the girl presented to our clinic with rectal blood loss and rectal tenesmus. Endoscopic examination of her colon demonstrated sessile and pedunculated polyps. The pedunculated polyps were removed endoscopically. Biopsies were taken from the sessile polyps. Histopathologic examination of the polypectomy specimen and the biopsies of the sessile polyps showed hyperplastic polyps. The endoscopy was repeated for the purpose of argon plasma coagulation ablation of the sessile polyps. Argon plasma coagulation caused an adequate ablation and the entire polyps were burned.

**Clinical discussion:** Argon plasma coagulation is an effective and safe technique in the endoscopic management of gastrointestinal conditions.

**Conclusion:** Further clinical trials including a comparison of argon plasma coagulation to other treatment modalities, as well as long-term follow-up after argon plasma coagulation treatment are required.

## 1. Introduction

Polyps are mucosal formations that protrude toward the lumen in the gastrointestinal tract. Colonic polyps are generally asymptomatic and if they are too large, they lead to symptoms including obstruction, ulceration, and bleeding. There are two types: neoplastic and non-neoplastic type [1]. Argon plasma coagulation (APC) is a well-established method applies high-frequency current to tissue in a non-contact mode. This device is aims to thermal coagulation of tissues. APC originally developed as an alternative to laser in open and laparoscopic surgery [2]. We describe a case of a 3-year-old girl with hyperplastic polyps. While many studies have investigated hyperplastic polyps, we have searched medical English literature, but we haven't come across a similar case. We report what we believe to be the first documented case report that described histologically confirmed hyperplastic polyps which were discovered three months after surgical management of Hirschsprung's disease which treated with argon plasma coagulation.

All our cases has been reported in line with THE CARE 2017 guidelines [3] and THE SCARE 2020 criteria [4].

## 2. Case report

A 3-year-old girl presented to our clinic in Syrian Specialty Hospital for a consultation visit with a chief complaint of bloody stool and rectal tenesmus that began 5 days ago. She was previously being treated by her pediatrician because of a history of chronic constipation and difficulty in defecation since the age of 3 months. Her bowel movements occurred every 3–4 days and associated with severe straining and pain. Her feces described by her mother as hard and large enough to occasionally cause rectal bleeding. There was history of delayed passage of meconium 3 days. She had no other medical conditions. The child's mother and maternal grandmother have constipation. The family history did not reveal any bowel diseases. Other family members have no other significant medical issues. Unsuccessful medical treatment consisted of

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increased fluid and fiber intake. The pediatrician prescribed mineral oil supplementation to address the patient's constipation with no positive results. Abdominal ultrasound was normal. Thyroid blood tests were within normal range. Barium enema was unremarkable. Colonoscopy revealed normal findings. Colonic biopsies were taken and they were histologically normal. At surgery, a full-thickness rectal wall biopsy was obtained. Histopathology demonstrated the absence of ganglion cells consistent with Hirschsprung's disease. She underwent a one stage unknown surgery for Hirschsprung's disease. Follow up after surgery revealed a toddler with consistent, soft, painless bowel movements at frequency of every 1–2 days. Three months after the surgery, the girl presented to our clinic with rectal blood loss and rectal tenesmus of 5 days duration. The child was well-appearing, alert, interactive, and cooperative during the examination. An oral examination revealed no lesions, ulcerations, or masses. Normal bowel sounds were present in all quadrants. Abdominal palpation revealed no tenderness, masses, palpable stool, or organomegaly. Positive physical findings were limited to the rectal exam, which demonstrated multiple polyps. The standard laboratory results (whole blood count, glucose, blood urea nitrogen, creatinine, electrolytes, prothrombin time, and partial thromboplastin time) were within normal limits. Endoscopic examination of her colon demonstrated 7 polyps (sessile and pedunculated). The polyps are 1–2 cm from the anal canal, located in the place of previous surgical clips. The pedunculated polyps were removed endoscopically. Biopsies were taken from the sessile polyps. Histopathologic examination of the polypectomy specimen and the biopsies of the sessile polyps showed hyperplastic polyps without any malignant features. After a case discussion between our pediatric gastroenterologists, the decision of treatment of the sessile polyps by argon plasma coagulation was made. The endoscopy was repeated for the purpose of APC ablation of the sessile polyps using power settings vary from 20 to 40 W. These settings caused an adequate ablation and the entire polyps were burned (Figs. 1-4). At 1-year follow-up, the patient was symptom-free and reported no more episodes of bloody stool. Follow-up endoscopic examination showed no recurrent polypoid lesions.

### 3. Discussion

Polyp is any protrusion from the surface of the intestinal mucosa, irrespective of its histological structure. Colorectal polyps classified as neoplastic (tubular adenoma, villous adenoma, tubulovillous adenoma), hamartomatous (juvenile, Peutz-Jeghers, Cronkite Canada), inflammatory (pseudo polyp, benign lymphoid polyp) or hyperplastic [5]. Hyperplastic polyps are the most common non-neoplastic polyps in the colon. Its prevalence is 20–35% according to autopsy data. They are



Fig. 1. Endoscopic view of sessile bleeding polyps.



Fig. 2. Endoscopic view at the beginning of the ablation process.



Fig. 3. Endoscopic view during the process of the APC ablation.



Fig. 4. Endoscopic view after the adequate ablation and the burn of the entire polyps.

generally in the form of nodular, polypoid lesions less than 5 mm [1]. Hyperplastic polyps are mostly benign. These polyps can be located throughout the entire colon, but are particularly localized in the distal colon and rectum. Endoscopically, they are seen as pearly colonic polypoid lesions. They develop as a result of irregular cell proliferation [6]. The argon plasma coagulator is a noncontact technique of delivering high-frequency monopolar current through ionized and electrically conductive argon gas, which is called argon plasma. This device was initially developed for the surgical purposes, it has seen an ever-expanding role in therapeutic endoscopy [7]. APC has revealed a remarkable wide spectrum of clinical applications. In a non-conduct mode, argon gas reaches the target tissue using a flexible catheter which passes through the endoscopic biopsy channel. APC could replace laser in clinical practice [2]. The duration of application, the power setting, and the probe-to-tissue distance are the most important factors influencing the thermal impact of APC. The lowest power settings and the shortest durations lead to the lowest risk of deep tissue injury [8]. Endoscopic applications of APC continue to expand in the management of various gastrointestinal bleeding conditions as well as in cases in which ablation of tissue abnormalities is necessary. Argon plasma coagulation has been successful in treating a variety of vascular lesions and ablative therapies [9].

#### 4. Conclusion

APC has rapidly gained importance in daily clinical practice. It is an effective and safe technique in the endoscopic management of gastrointestinal conditions. Further clinical trials including a comparison of APC to other treatment modalities, as well as long-term follow-up after APC treatment are required.

#### Ethical approval

Institutional review board approval is not required for deidentified single case reports or histories based on institutional policies.

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#### Author contributions

All authors contributed to the development of the manuscript and the care of the patient presented. All authors approved the final manuscript.

#### Registration of research studies

None.

#### Guarantor

Rahaf Ibrahim.

#### Consent

The patient's mother consented to the publication of this deidentified case report.

#### Provenance and peer review

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#### Declaration of competing interest

None.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.104098>.

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