

Argon plasma coagulation (APC) is a safe method of electrocoagulation [1,2]. However, perforation can occasionally occur after the development of submucosal emphysema: contact of the probe with the mucosa, thermal injury, and high argon flow can all lead to an escape of gas through the gastrointestinal tract wall. Pneumoperitoneum developing after APC can be asymptomatic and heal spontaneously, and the perforation site might not be found at laparotomy [2–5]. We have encountered two patients with submucosal emphysema and pneumoperitoneum which developed after APC.

The first patient was a 77-year-old woman with colonic angiodysplasias which were eradicated using APC. Submucosal emphysema developed at one coagulation site in the sigmoid colon, and some hours later the patient reported that she had epigastric pain. A radiograph revealed free air in the peritoneal cavity. No perforation was found at laparotomy, but an area of intramural emphysema was seen. The patient recovered without treatment.

The other patient was a 68-year-old man who underwent resection of a 2-cm flat lesion in the sigmoid colon, followed by APC to complete the treatment. Submucosal emphysema developed, so computed tomography was performed, which showed air in the peritoneal cavity, but no signs of peritonitis (Figure 1). After 7 days of conservative treatment the pneumoperitoneum disappeared.

Submucosal emphysema and pneumoperitoneum probably develop after APC more frequently than is reported. Submucosal emphysema often develops if the probe is old and positioned close to the mucosa. In our second patient the diagnosis of pneumoperitoneum was made by computed tomography, which had been performed because of the submucosal emphysema. If radiographs were taken after every APC, this would probably reveal a number of cases of asymptomatic pneumoperitoneum.



**Figure 1** Computed tomographic view of massive pneumoperitoneum caused by treatment of a flat colonic lesion by argon plasma coagulation.

Diagnosis of pneumoperitoneum after APC should not automatically mean that there is a perforation. Conservative treatment is the first option for patients with air in the peritoneum after APC, with surgery considered for those with signs of peritonitis. It is very important to distinguish between a “perforation” and an “accumulation of air” that mimics perforation, but which is in fact caused by the passage of gas through the gut wall. Persistent air in the cavity is not an alarming sign, because argon is not resorbed physiologically; conservative treatment can be safely prolonged, as long as the patient remains asymptomatic and air is resorbed.

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