

**Colonic explosion by electronic cautery during living donor liver transplantation.**

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Colonic gas explosion is rare, but severe complication in general surgery, endoscopic intervention.

Three factors are prerequisite to trigger an explosion of digestive gases: the presence of combustible gases (hydrogen, methane), combustive gas (oxygen), and an initiating heat source (endoscopic or surgical electro cautery)<sup>1)</sup>. Since Limbling A et al reported a first case of explosion in 1944<sup>2)</sup>, several cases have been reported<sup>3)4)</sup>. Here, we report a case of colonic gas explosion during living donor liver transplantation with inoperative video.

A 65-year-old female underwent living donor liver transplantation for hepatitis B virus cirrhosis, using left liver graft which was donated from her 55-year-old younger sister. Transplant surgery was uneventfully completed, and at the final step, we found that transverse colon was so expanded with gas, that we could not close the abdomen. After the unsuccessful colonoscopy, we finally decided to deflate the colon with making a small hole by electric cautery. At the moment that we made a hole by electric cautery in transverse colon, it went up in an explosion, and whole colonic serosa was torn longitudinally along taenia. After the colon gas was suctioned, the splitted taenia was sutured, and the stoma was created at the end of ileum. Fortunately, posttransplant course was uneventful, and the patient is currently doing well with normal liver function

and ordinary oral intake, 19 months after surgery. The stoma was closed with bowel anastomosis, 6 months after the liver transplantation. Although it did not lead to life-threatening condition in this case, the surgeons should recognize this serious complication.

## References

(1)De Wilt JH, Borel Rinkes IH, Brouwer KJ: Gas explosion during colonic surgery. *J R Coll Surg (Edinb)* 1996; 41: 419

(2)Limbling A, Tuffert L: L'explosion des gaz intestinaux au cours de l'electro-coagulation intra-rectale. Un cas de rupture sigmoïdienne mortelle. *Arch Mal Appar Digestif Nutr*; 1944: 33: 148-152

(3)Sadanaga M, Kano T, Morioka T: A case of colonic gas explosion caused by electrocautery. *J Anesth*; 1992: 6: 117-119

(4)Pichon N, Maissonette F, Cessot F et al: Colonic perforations after gas explosion induced by argon plasma coagulation. *Endoscopy*; 2004: 36: 573

