# Transnasal flexible bronchoscopic implantation of a nickel titanium (NiTi) bronchial occlusive device for a bronchobiliary fistula

**Fig. 1** Endoscopic retrograde cholangiopancreatography (ERCP) showing the bronchobiliary fistula.

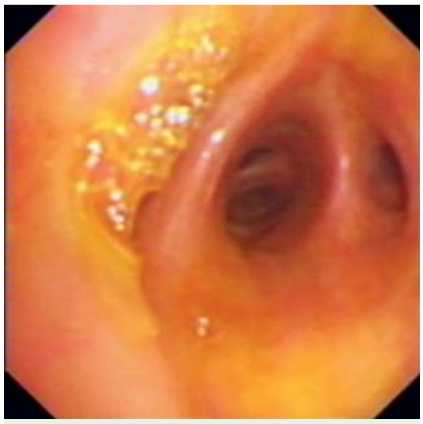

**Fig. 2** Yellow foamlike bile and yellow-stained mucosa are seen in the right middle bronchial segment.

**Fig. 3** The occlusive device is attached with a push rod and sheath tube.

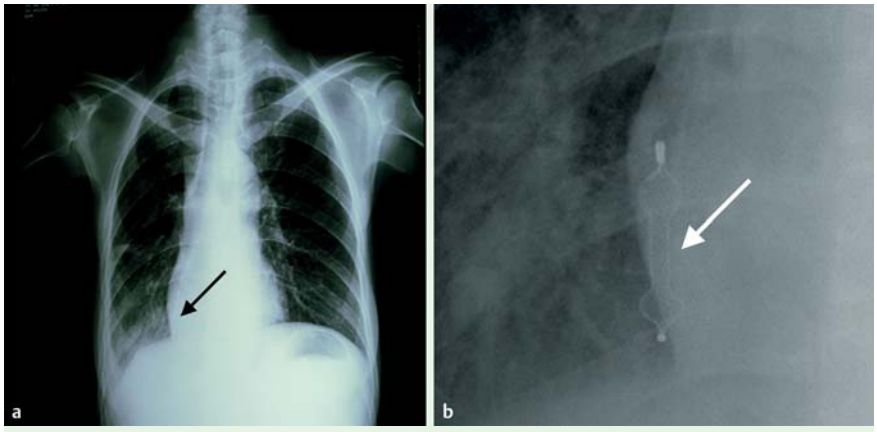


**Fig. 4** The occlusive device visualized on a chest radiograph. **a** Posteroanterior view showing the shadow of the occlusive device in the right lower lung near the heart profile (arrow); **b** Enlarged image of the occlusive device (arrow).

**Fig. 5** The occlusive device covered completely by granulation and epithelial tissue 30 days after placement.

Bronchobiliary fistula (BBF) is rarely seen, and its management can be challenging [1,2]. Although conventional surgical repair is effective, it is a complicated and traumatic procedure [3,4]. To overcome this difficulty, we have developed a set of nickel titanium (NiTi) bronchial occlusive implantation devices and we have successfully implanted one device in a patient with a BBF.

A 60-year-old woman presented with recurring cough and expectoration of bilelike yellow phlegm since 3 years. She had undergone lithotomy with cholecystostomy, lithotomy with left hepatic duct drainage, and common bile duct drainage 3 years ago in a local hospital because of cholelithiasis. She had developed fever and cough after the surgery, and coughed up 100 – 200 mL of bitter, bilelike yellow phlegm daily. Endoscopic retrograde cholangiopancreatography (ERCP) findings confirmed the diagnosis of BBF (**Fig. 1**). Bronchoscopic examination revealed continuous oozing of bile from the median bronchial segment of the right middle lobe (**Fig. 2**).

Surgical treatment was declined due to her physical status. So we decided to occlude the bronchobiliary fistula with a dumbbell-shaped NiTi bronchial occlusive device (**Fig. 3**). We chose a 5 mm (length) × 4 mm (diameter) device based on the size of the target bronchus of occlusion. It was implanted in the target zone successfully through the bronchoscope in one attempt. Expectoration of the bilelike phlegm ceased 7 days later. Radiographic examinations at day 1, 7, and 30 showed the occlusive device in place and gradually expanding to its full size (**Fig. 4**). Bronchoscopy showed the device to be completely covered by granulation and epithelial tissues by postoperative day 30 (**Fig. 5**). No displacement or dislodgment of the occlusive device was observed in the 3-year follow-up period and the symptoms of BBF disappeared completely. This case demonstrates that manipulation and placement of the NiTi occlusive implantation system is easy, with good

long-term outcome and histocompatibility. It can be considered the treatment of choice for various BBFs, refractory pneumothorax, and fatal hemoptysis.

**Competing interests:** None

Endoscopy_UCTN_Code_TTT_1AR_2AJ

**Y. Shang, C. Bai, X. P. Yao, Y. Huang, L. J. Zhao, Q. Li**
Department of Respiratory Medicine, Changhai Hospital, Second Military Medical University, Shanghai, China

## References

1 *Chong CF, Chong VH, Jalihal A et al.* Broncho-biliary fistula successfully treated surgically. Singapore Med J 2008; 49: 208 – 211
2 *Chua HK, Allen MS, Deschamps C et al.* Bronchobiliary fistula: principles of management. Ann Thorac Surg 2000; 70: 1392 – 1394
3 *Günlemez A, Tugay M, Elemen L et al.* Surgical experience in a baby with congenital broncho-biliary fistula. Ann Thorac Surg 2009; 87: 318 – 320
4 *Rose DM, Rose AT, Chapman WC et al.* Management of bronchobiliary fistula as a late complication of hepatic resection. Am Surg 1998; 64: 873 – 876

## Bibliography

**DOI** 10.1055/s-0029-1244059
Endoscopy 2010; 42: E225 – E226

ISSN 0013-726X

## Corresponding author

***Q. Li, MD***
Department of Respiratory Medicine
Changhai Hospital
Second Military Medical University
168 Changhai Road
Shanghai
China
Fax: +86-21-51190920
liqressh@yahoo.com.cn