

Long-term efficacy and safety of silicone stents for the treatment of 110 cases of benign airway stenosis

LQ. Lin(Ms)^a, Y. Chen^a, CH. Zhong^a, XB. Chen^a, CL. Tang^a, ZQ. Zhou^a, SY. Li*^a(Prof)
^a National Clinical Research Center for Respiratory Disease, Guangzhou Institute of Respiratory Health, First Affiliated Hospital of Guangzhou Medical University, Guangzhou, CHINA

Background: There is a lack of long-term efficacy studies of silicone stents in the treatment of Benign Airway Stenosis.

Objective: There is a lack of long-term efficacy studies of silicone stents in the treatment of Benign Airway Stenosis. We conducted this study to retrospectively observe and evaluate the long-term efficacy and safety of silicone stents in the treatment of benign airway stenosis.

Methods: We retrospectively reviewed the clinical data of patients with benign airway stenosis who were treated with silicone stents at the First Affiliated Hospital of Guangzhou Medical University from March 2012 to October 2021. The general clinical data, diagnosis, interventional procedures, bronchoscopic findings and related complications were collected and analyzed.

Results: A total of 110 patients with benign airway stenosis met the inclusion criteria. There were 43 males (39.09%) and 67 females (60.90%), ages 13 to 76 years, with an average age of (41.78 ± 15.26) years old. Causes of stenosis were tracheobronchial tuberculosis (EBTB) in 62 patients (56.36%), tracheotomy stenosis in 21 patients (19.09%), post-intubation stenosis(EDIT) in 17 patients (15.45%), anastomotic stenosis in 5 patients (4.54%) , and others in 5 patients(4.54%). The placement position of silicone stents was left main bronchus in 43 patients (39.09%), right main bronchus in 14 patients (12.73%), and trachea in 53 patients (48.18%). The median time of stent placement was 16.35 months.

For 110 patients, the significant effective rate was 30.9%, the effective rate was 32.7%, the ineffective rate was 36.4%, and the total effective rate was 63.6%. The stent-related complications included secretion retention 71.8%, granuloma formation 65.5%, stent angulation 20%, stent migration 10.9%. There was a significant statistical difference between the left main bronchus and trachea in curative effect (P=0.004), the total rate of complications (P=0.04), granuloma formation (P<0.001), and stent angulation (P<0.001).(shown in Table. 1)

Multivariate logistic regression analysis showed that age (P = 0.013, OR= 3.713, 95% CI: 1.325-10.403), stent placement time (P = 0.001, OR = 0.177, 95% CI: 0.067-0.47), and the total times of tracheoscopy after stent implantation (P = 0.024, OR = 3.211, 95% CI: 1.163-8.864) were statistically significant and had independent influence on the prognosis.

The long-rank test conducted showed that a benefit could get in of prolonged relapse-free group by prolonging the duration of silicone stent placement (P=0.0038). (shown in Fig. 1)

Conclusions: Airway silicone stent has a moderate curative effect and moderate safety in the treatment of benign airway stenosis. The curative effect and safety still need to be further improved.

	Total	trachea	Left main bronchus	Right main bronchus
Number	110	53(48.18%)	43(39.09%)	14(37.27%)
Curative effect				
Significant effective	34(30.90%)	23(43.39%)	8(18.60%)	3(21.43%)
Effective	36(32.73%)	18(33.96%)	12(27.90%)	6(42.86%)
Ineffective	40(36.36%)	12(22.64%)	23(53.49%)	5(35.71%)
Total Effective rate	63.64%	77.35%	46.51%	64.29%
Complications				
Secretion retention	71.80%	69.80%	68.30%	85.70%
Granuloma formation	65.50%	47.20%	85.40%	71.40%
Stent angulation	20.00%	3.80%	48.80%	0.00%
Stent migration	10.90%	11.30%	12.20%	14.30%
Total rate of complications	90.90%	83.00%	100.00%	92.90%

Table 1. The curative effect and complications.

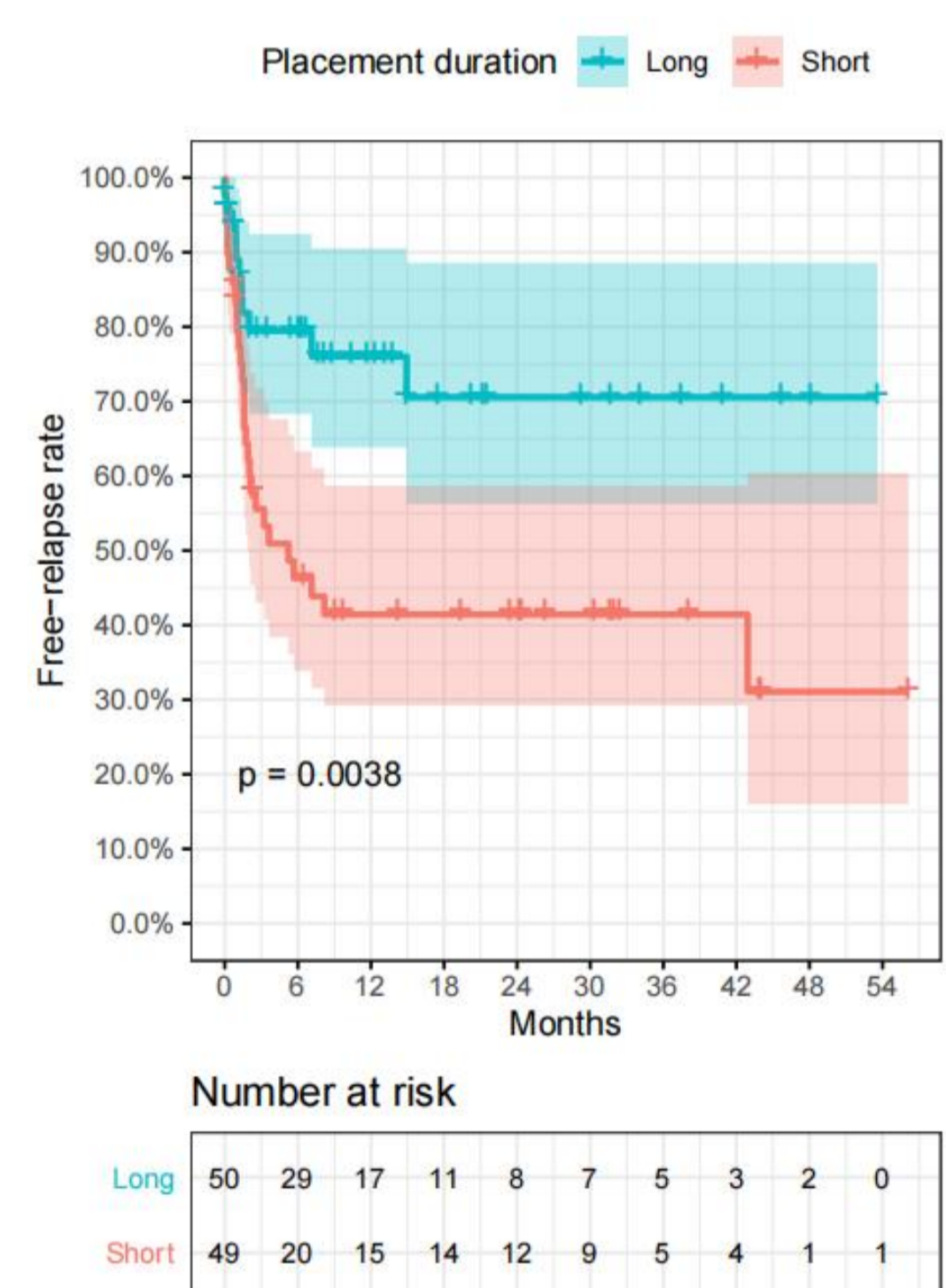


Fig.1: relapse-free survival curve