

# Nursing care of retractable stent placement treating benign esophageal stricture after esophageal cancer operation

Ding xiafen, Shi ruihua, Yu lianzhen, Ling tingsheng  
Department Of Gastroenterology, The First Affiliated Hospital of Nanjing Medical University, Nanjing,  
( 210029 )China

## 【 Abstract 】

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| Objective  | Study the nursing care, operating support and method for placement of retractable stent to treat benign esophageal stricture guided by endoscopy.  |
| Methods    | 36 cases of benign esophageal stricture were treated with retractable Ti-Ni alloy stent guided by endoscopy. A nursing care was performed by offering preoperative counseling services, supporting roles during stent placement, strengthening postoperative nursing care, such as counseling on dietary, monitoring clinical outcome until the removal of the stent.  |
| Results    | Recent remission rate reached 100% among 36 cases. The lumen diameter after therapy was enlarged significantly, with no serious complication occurred. Patients recovered well after retracting stent. The quality of life was improved.   |
| Conclusion | Retractable stent placement guided by endoscopy curing benign esophageal stricture gained a higher success rate with less complications and significant outcome, and therefore, patients' quality of life is improved. Preoperative psychological consultation, proper nursing cooperation during operation, postoperative observation and nursing care, especially diet management, plays an important role, which can effectively improve the patients' life quality as well as complications during nursing care. |

## 【 Key words 】

Retractable Ni-Ti alloy stent; Benign esophageal stricture; Nursing care

Patients with benign esophageal stricture after esophageal cancer operation are plagued by such discomforts as eating difficulty, which not only lowered their qualities of life but also resulted in secondary surgical therapy. With the rapid development of endoscopic techniques, dilatation with Savary-Gilliard Bougies, air-pressured or water-pressured balloon guided by endoscope made certain curative effect. However, the recurrence rate of stenosis is quite high, leading to repeat treatment. In recent years, our department has replaced conventional dilatation of Savary-Gilliard Bougies, air-pressured or water-pressured balloon by homemade retractable Ni-Ti esophageal stent to treat benign esophageal stricture and gained quite good outcome. The nursing care and

coordination of recoverable stent placement guided by endoscope are reported as follows.

## 1 Clinical data

### 1.1 General data

Totally 36 patients, 25 male and 11 female, aged 44-76, average age  $57 \pm 8$ , who admitted during May 2010 to May 2006 for poor outcome of 2-4 times esophagectasia due to benign esophageal stricture which still persists, are enrolled in the treatment of homemade retractable Ni-Ti alloy stent guided by endoscopy. 5 cases suffered from upper esophageal stenosis. 23 cases suffered from middle esophageal stenosis. 8 cases suffered from lower esophageal stenosis. Dysphagia level will be assessed as per Stooler's score: Level 1 x 3 cases, Level 2 x 13 cases,

Level 3 x 14 cases, Level 4 x 6 cases.

## 1.2 Therapeutic instrument

OlympusGIF-240 gastroscope, Savary-Gilliard Silicon Bougies, Retractable esophageal Ti-Ni stent by Microtech (Nanjing) Co., Ltd, stent inserter, guide wire, tongue depressor, vascular forceps, nasal catheter and scissor were used.

## 1.3 Operation method

The gastroscope was inserted into the most strictured part in esophagus, guide wire was inserted until the cardia. The gastroscope was withdraw and Savary dilator (diameter 5~15mm) was inserted over the guide wire. The esophagus was dilated progressively to >12.8mm in diameter. The gastroscope was inserted again for measuring the length of stenosis segment. An appropriate stent was selected. A stent delivery placement system was inserted over the guide wire. The retractable stent was deployed after accurate positioning was re-confirmed. The gastroscope was inserted again for checking the positioning and dilatation of the stent. The retrievable wire was taken from nasal cavity though pharynx nasalis by nasal catheter after successful deployment and affixed on cheek. The time of stent removal was depended on esophageal dilatation based on gastroscopy confirmation on Day 3~14. The stent was removed by the following steps. The retrievable wire could be placed oral cavity first. The gastroscope was inserted and ice water (0°C) was injected through biopsy channel of gastroscope into stent. As the stent was cooling down, the stent could be withdrawn easily by pulling the retrievable wire. Finally, the gastroscope was inserted again for inspecting the dilated segment.

## 2 Result

36 Patients were delivered homemade retractable esophageal Ti-Ni alloy stents under gastroscope. The stent dilatation by using gastroscope was achieved and successfully removed on Day 3~14 (average Day 7.96). Remission rate was 100%. Stenosis diameter before and after therapy were 1~6mm and 12~18mm, respectively, and average diameter  $4.6\pm 3.5$ mm and  $13.8\pm 3.7$ mm respectively. Diameter of the dilated segment after treatment significantly increased in comparing with that before treatment. The difference indicated statistical significance ( $P<0.001$ ).

## 3 Nursing care

### 3.1 Preoperative care

3.1.1 Patients, who experienced with surgical operation, chemotherapy, radiotherapy and repeated stenosis of stoma, showed psychological symptoms such as anxiety, stress and even despair. Therefore, they had a great expectation on stent placement. Nursing staffs shall provide them sufficient care. Counseling should be covered the introduction of the therapeutic method, prospective outcome and the treatment consent of the patients and their family members.

3.1.2 Cardio-pulmonary function, barium meal examination would be performed before the treatment. A routine preparation included selecting an appropriate dilator, preparing ECG monitoring and rescue equipments. Special supportive treatment shall be arranged if the health conditions of patients were relatively weak.

3.1.3 Preoperative fasting was recommended 6 hours after the treatment. Anisodamine 10mg, Sauteralgyl 50mg were be injected and 10 ml 2% lidocaine would be sprayed 15 minutes before placement of stent.

### 3.2 Patient shall be laid in left-lateral position with the mouth slightly downward

The nurse should help the patient to clear oral secretion and prevent them from falling off from their beds. The mouth block should be placed properly in order to prevent patient from damaging the gastroscope. Nurses should monitor closely the pulse rate, breathing rate, blood pressure and patient's gesture during the operation. Right accessing the guide wire is the key for successful stent placement. Nurses shall help operator to introduce the guide wire, affix position of the wire when withdrawing the gastroscope to prevent it from sliding off with gastroscope. Patients may get nausea and pain during dilatation and multiple entry of gastroscope. Nurses shall care the patients properly throughout treatment.

### 3.3 Postoperative nursing care

3.3.1 The nurse should life up the patient's head by 30 cm immediately in order to prevent from choking. Different levels of transitional retrosternal pains may be occurred as a result of esophageal reflux or mechanical oppression by stent. Patients may feel additionally anxiety. So nurses shall provide appropriate psychological guidance in order to strengthen patients' confidence to fight against disease.

3.3.2 After successful placement of stent, patients shall drink a small amount of warm water immediately to promote the dilatation of stent. Attention should be paid if any bucking occurred. If no bucking was occurred after 4-6 hours, semi-fluid warm food should be provided on the

second day. Patient should chew carefully and swallow slowly. Some foods were not recommended, such high fiber food or beef, which may cause stent blockage. Cold drink and food should be avoided as they may lead to shrinkage, migration, dropping or deformation of the stent.

3.3.3 Different levels of retrosternal pain and discomfort were reported in 7 patients (19.4%) in the after operation. 6 cases (16.7%) were relieved after psychological consultation, lifting bed head, taking acid inhibitor or intermittently ace-sodyne and immediate improvement showed in 1 case after taking out the stent.

3.3.4 Postoperative hemorrhage was a common complication. Mild bleeding occurred in mucosa of local stoma after stent placement. Some patients had a positive result in stool occult blood test and only 1 case (2.8%) displayed melena. All patients got better after such treatments as homeostasis, acid inhibition and mucosa treatment. Attention should be paid on some vital sign of patients after operation, such as blood pressure, pulse rate, color, times and property of vomiting and/or stool. In case of hemorrhage, the patient should be treated immediately.

3.3.5 Migration and sliding off of stent were common complications, which mainly due to the design of losing of retractable stent, the technique of stent deployment, resulted from severe vomiting or improper dietary. Migration was found in 2 cases (5.7%) guided by gastro-scope during operation, which is corrected by spraying icy saline. Then, 50°C hot water was sprayed to the stent to order to make it expand again. In order to reduce occurrence of complications, stent with suitable diameter and hardness should be selected according to radiography results and diameter of dilator. Horn-tip stent were recommended. No solid food shall be taken 6-12h after operation. Patient should intake warm semi-fluid food slowly and carefully. Coarse food, high-fiber and cold diets were strictly prohibited. Symptomatic treatment shall be made in case of violent vomiting. In case of obstruction due to stent migration/sliding off, the position of stent could be adjusted or re-placed the stent under endoscopy.

3.3.6 A sense of obstruction occurred if the patients took

high-fiber or cold food. Swallowing with small amount and drinking more water after meal was an effective way preventing from blockage. Incarceration can be treated with help of endoscope, which was evidenced by 1 case.

3.3.7. Perforation and subcutaneous emphysema may be occurred if the patient was placing stent with high stress and extruding power. Under-sizing the diameter of stoma, local inflammation or repeated dilatation were risky factors. After operation, closely monitoring was necessary if subcutaneous swelling near the neck or bucking and choking sensation in chest. Once any symptom was found, patients shall be fasten and reported immediately. Meanwhile, closed monitoring and conducting anti-infective therapy was necessary. No perforation or subcutaneous emphysema was found in 36 patients during the observation period.

3.3.8 Generally speaking, the retractable stent could be placed for 7-14 days. Esophageal re-stenosis may occur shortly after stent placed. Once occur, it was difficult to take out the stent because the stent was being encysted by granulation tissue. If the stent was taking out by force, it may easily result in hemorrhage in digestive tract. Monitoring the color of stool was an effective indicator if there is any hemorrhage in digestive tract after taking out stent. Patients shall be instructed to take soft, light, non-irritating food with low residue in the initial stage. Some simple instructions, such as seating while eating, walking exercise up to 1 hour after meal, facing up bed before sleeping, were recommended. Attention should be paid if dysphasia occurred during stent placement.

In summary, the application of retractable stent treating benign esophageal stenosis is a simple method guided by endoscopy. It is a prospective treatment and cost effective way with less invasive, less complication to patient. It is widely used for the patients with early stage benign esophageal stricture, who need repeated dilatation. The authors believe that good preoperative preparation, clear counseling to the patients, accurate stent positioning, effective patient monitoring, postoperative nursing care and dietary management are critical factors to the successful placement of stent, which are helpful to gain satisfactory outcome and significantly increase patients' quality of life.

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