The Endoscopic Treatment Strategy for Superficial Esophageal Cancer

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Background and Aim

Endoscopic submucosal dissection (ESD) allows en bloc removal of superficial esophageal squamous cell carcinoma (SCC). However, esophageal stricture often occurs after ESD when the lesion involves more than three-fourth of the circumference of the lumen. Frequent balloon dilatation via endoscopy is required in such situation, thus causing health economic problem. Furthermore, a consensus guideline for the treatment of MM/SM1 lesion is yet to be determined. In this study, we investigated the clinical outcomes, prevention of post-ESD stenosis and long terms prognosis in patients with superficial esophageal SCC who underwent ESD.

Patients and methods

A total of 592 cases in 439 consecutive patients were treated by ESD in our department from April 2006 to January 2016.

We investigated the following 3 items.
1) Clinical outcomes and complications.
2) Usefulness of oral steroids administration, the local steroids injection, or endoscopic transplantation of tissue-engineered autologous oral mucosal epithelial cell sheets for the prevention of post-ESD stenosis.
3) The long-term prognosis of esophageal cancer who underwent ESD.

Results

1. Clinical outcomes

En bloc resection rate was 99.8% (591/592) and en bloc curative Resection rate was 91.0% (539/592). The rate of perforation, post ESD bleeding, and post-procedural stricture was 0.0% (0/592), 0.7% (4/592), and 6.6% (39/592), respectively.

2. Prevention of post-ESD stenosis

1) Oral steroid vs Steroid injection
In oral steroid group, the frequency of endoscopic balloon dilation (median) was 0 time (0-15), the duration of endoscopic balloon dilation (median) was 0 day (0-357), the ulcer healing period was 60 days (23-245) and the rate of stenosis was 15.6% (14/90). In steroid injection group, the frequency of endoscopic balloon dilation (median) was 0 time (0-22), the duration of endoscopic balloon dilation (median) was 0 day (0-346), the ulcer healing period (median) was 66.5 days (28-332) and the rate of stenosis was 13.9% (11/79).

There was no significant difference between oral steroid and steroid injection in overall ESD group. Both oral and local injection prevent post-ESD stenosis to significant extent.

However, in complete circular ESD cases, required EBD sessions and stenosis rate were significantly less frequent in oral steroid group (1.3 times (mean), 33.3% (8/24)) compared to steroid injection group (8.0 times, 100% (3/3)) (p < 0.01).

2) Cell sheet transplantation vs Steroid administration

In cell sheet transplantation group, the frequency of endoscopic balloon dilation (median) was 0 time (0-7), the duration of endoscopic balloon dilation (median) was 0 day (0-98), the ulcer healing period (median) was 36.0 days (28-172), and the rate of stenosis was 40.0% (4/10).

Protective effect of stenosis in the cell sheet group was equal to oral steroid group and steroid injection group. However, ulcer healing period of the cell sheet transplantation group was significantly shorter compared with the oral and injection group (p < 0.001).

3) Long-term prognosis of ESD for superficial esophageal SCC

Overall 5 year survival rate and disease specific 5 year survival rate of EP~SM1 cases was 95.9%, 99.4% respectively. There were no significant difference in 5 year survival rate between EP/LPM/MM or SM1 groups (Overall Survival rate: 96.1% vs 90%, Disease-specific Survival rate: 100% vs 90%, respectively).

Conclusions

Esophageal ESD achieved high en bloc resection rate and curability with low rates of complications.

Oral prednisolone administration and injecting steroid may be effective treatment strategy for reducing post-ESD stricture after semi-circular ESD.

However, oral steroid administration is more useful than local injection therapy for reducing post-ESD stricture after complete circular ESD.

Cell sheet transplantation is a promising regenerative medicine technology to treat post-ESD stenosis, since ulcer healing period of the cell sheet transplantation group was significantly shorter compared with steroid administration.