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Efficacy of Endoscopic Submucosal Dissection for Early Gastric Neoplasms: Analysis of 1123 Lesions

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Background: Endoscopic submucosal dissection (ESD) is a useful technique for the treatment of early gastric neoplasms because this procedure facilitates en bloc resection. ESD has recently been established as a standard treatment in Japan for early gastric neoplasms, and this procedure is being used increasingly worldwide. However, the problems associated with ESD are the advanced techniques required and the high frequency of procedure-related complications. The aim of this study was to investigate the efficacy of ESD for early gastric neoplasms.

Methods: This study investigated 1123 lesions (967 cases) in early gastric neoplasms treated by ESD from May 2003 to August 2010 at Fukuyama Medical Center, Mitoyo General Hospital and Kagawa Prefectural Central Hospital. We investigated patient characteristics; size, type, and location of lesions; en bloc resection rate; curative resection rate; frequency of residual disease or recurrence; procedure time; and procedure-related complications.

Results: The median age was 72 years (range 26-95), 678 males and 289 females. The mean follow-up period was 788 days. There were 249 (22%) adenoma lesions, 742 (66%) intramucosal adenocarcinomas, and 132 (12%) submucosal invasive adenocarcinomas. The lesions were located in the upper area of the stomach in 241 (21%), the middle area in 449 (40%), the lower area in 427 (38%), and the anastomotic site in 6 (0.53%) lesions. The mean size of lesions was 18.5 mm (range 1-85), and the mean size of resected specimens was 35.2 mm (range 0-107). There were 24 (2.1%) elevated, 532 (47%) surface-elevated, 27 (2.4%) surface-flat, and 540 (48%) surface-depressed types of lesions observed on endoscopy. Among underlying diseases, hypertension was present in 456 (41%), diabetes mellitus in 155 (14%), hyperlipidemia in 140 (12%), heart diseases in 168 (15%), cerebrovascular diseases in 84 (7.5%), chronic renal failure in 22 (2.0%), and 183 (16%) cases were treated with anti-coagulation agents. En bloc resection rate was 94% (1123 of 1051), and curative resection rate was 84% (941 of 1123). The rate of residual disease and recurrence was only 1.1% (12 of 1123). The death rate was 3.2 %; however, the reasons were attributed to the other diseases. The mean procedure time was 98 mins (range 9-640). Regarding procedure-related complications, perforations occurred in 27 (2.4%), and delayed bleeding was observed in 56 (5.0%). Only 1 of the 27 cases with perforation required laparotomy. Eleven of the 56 cases with delayed bleeding required blood transfusion; however, none of the cases required hemostatic surgery. Fatal bleeding occurred in one case.

Conclusions: We revealed the characteristics of early gastric neoplasms treated by ESD. This study demonstrated that ESD for early gastric neoplasms is an excellent procedure, because the en bloc and curative resection rates are very high and residual disease or recurrence is rare. However, we also clarified that the problems associated with this procedure are the long procedure time and relatively high frequencies of procedure-related complications. We should seek ways to shorten the procedure time and decrease these complications.