

Endoscopic surgery versus conservative treatment in nasopharyngeal carcinoma patients with nasopharyngeal necrosis

Endoscopic surgery for nasopharyngeal necrosis was associated with higher overall survival rates compared to traditional conservative treatment. Endoscopic surgery is an independent protective factor for the survival of nasopharyngeal necrosis patients.

INTRODUCTION: Nasopharyngeal necrosis is a common sequela of treatment for nasopharyngeal carcinoma, especially in recurrent cases. Nasal endoscopic surgery and conservative therapy are the main treatments for nasopharyngeal necrosis, but there is no study directly comparing their efficacy. This retrospective study aims to compare the effect of endoscopic surgery and conservative therapy on the treatment of nasopharyngeal necrosis and to identify the potential beneficiaries for each treatment.

METHODS: 517 NPC patients with nasopharyngeal necrosis between 2008 and 2020 were included in this study, of whom 287 received conservative therapy and 230 received nasal endoscopic surgery. The primary endpoint was overall survival. Propensity score matching and inverse probability of treatment weighting were used to balance confounding factors between the two groups. The Kaplan-Meier curve was used to estimate patient survival, and the survival difference between the two groups was compared using the Log-Rank test. The COX proportional hazard model was used to identify independent prognostic factors for nasopharyngeal necrosis. In addition, subgroup analysis was performed to determine the effectiveness of endoscopic surgery and conservative therapy in patient subsets.

RESULTS: In the unmatched cohort, the 3-year overall survival was 35.0% (95%CI, 29.3-41.8%) in the conservative therapy group versus 70.5% (95%CI, 64.5-77.1%) in the endoscopic surgery group. Patients in surgery group had higher cure rates (73.0%, 95%CI 67.0-78.4%) than those in conservative therapy group (33.1%, 95%CI 27.9-38.7%). PSM and IPTW analyses yielded similar results. Multivariate analyses in all three cohorts showed that nasal endoscopic surgery was an independent protective factor in OS of nasopharyngeal necrosis patient. The benefit of endoscopic surgery was consistent across all subgroups except for patients with superficial mucosal necrosis.

CONCLUSION: This study shows that treatment with endoscopic surgery yields better efficacy than conservative therapy for NPC patients with nasopharyngeal necrosis. Conservative therapy may be preferred for patients with superficial mucosal necrosis.

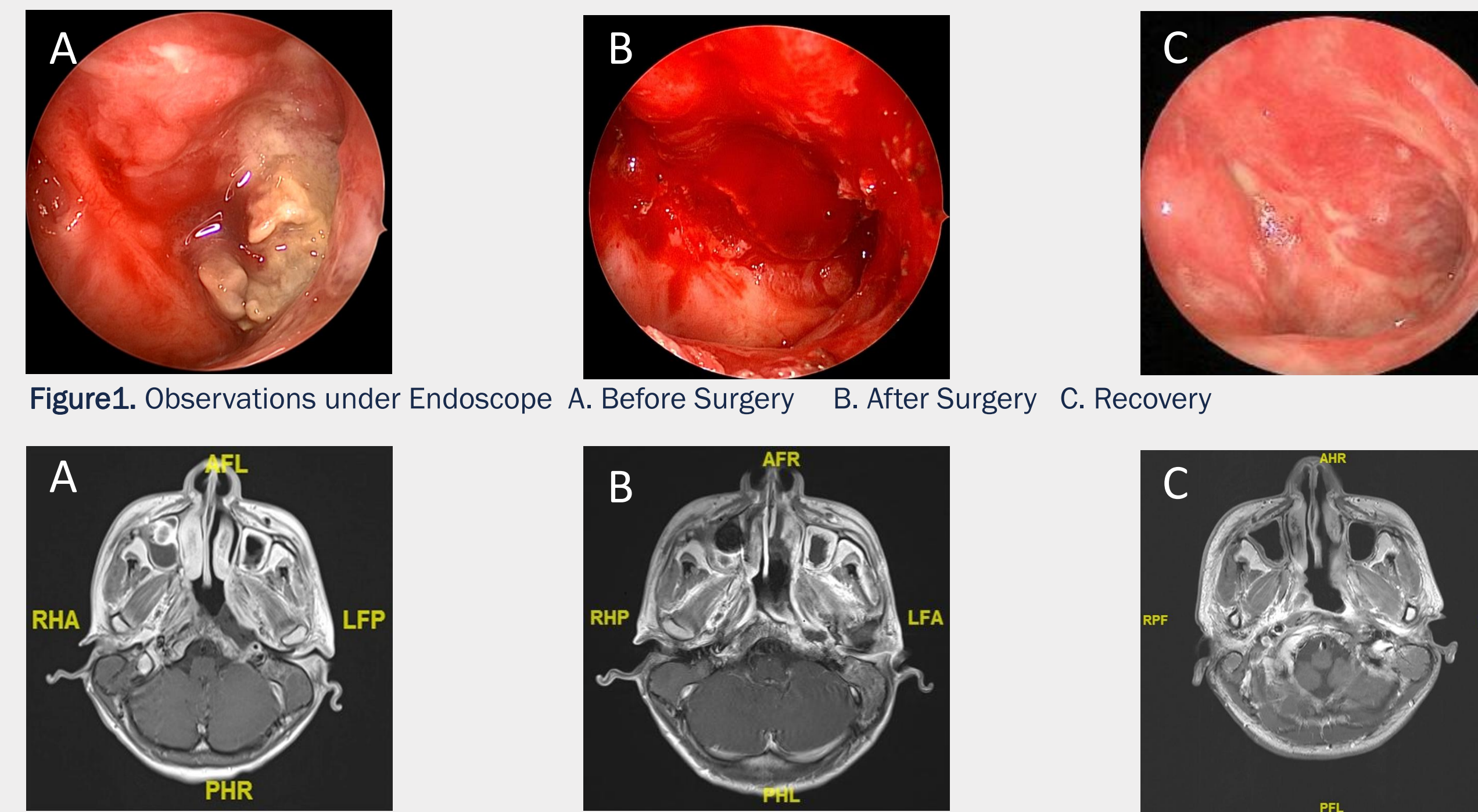


Figure1. Observations under Endoscope A. Before Surgery B. After Surgery C. Recovery
Figure2. Comparison of MRI A. Before Surgery B. After Surgery C. Recovery

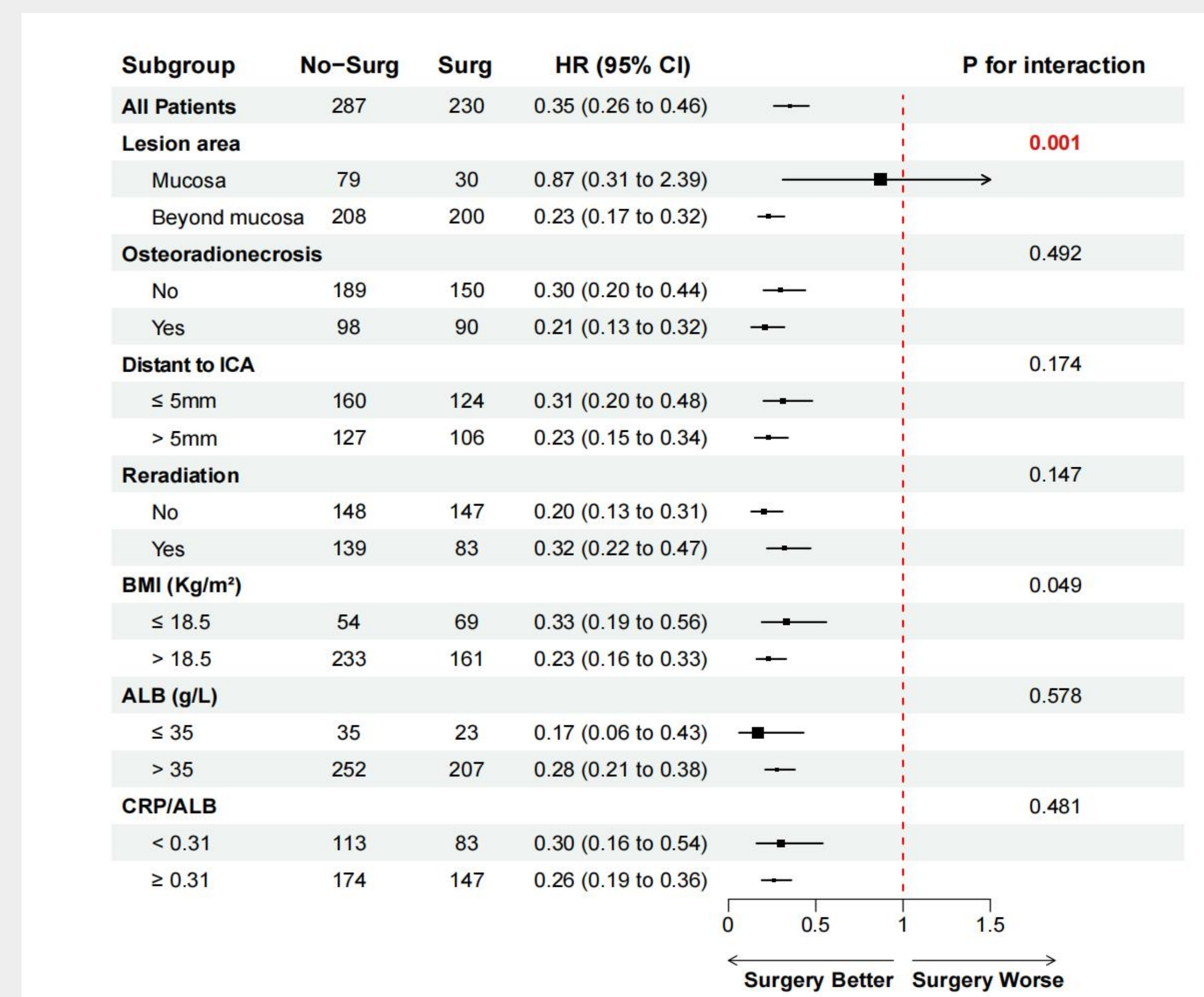


Figure3. Forest Plot of Subgroup Analysis in the Original Cohort

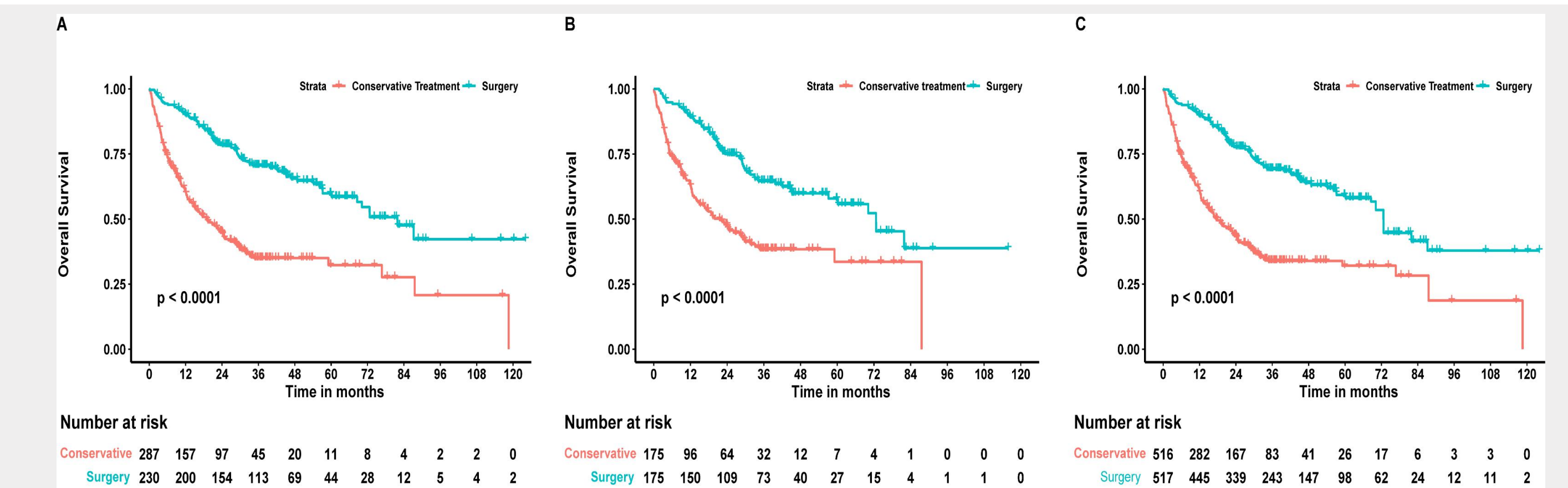


Figure4. OS Survival Curves of Endoscopic Surgery and Conservative Treatment in the 3 Cohorts A. Original Cohort B. PSM Cohort C. IPTW Cohort OS, overall survival.

Variables	Univariate analysis		Multivariate analysis	
	Hazard ratio (95% CI)	P-value	Hazard ratio (95% CI)	P-value
Treatment (surgery vs. conservative treatment)				
Unmatched	0.347 (0.264-0.455)	<0.001	0.290 (0.209-0.375)	<0.001
Propensity score matched	0.421 (0.306-0.560)	<0.001	0.325 (0.234-0.452)	<0.001
IPTW matched	0.357 (0.269-0.474)	<0.001	0.298 (0.220-0.405)	<0.001
Smoking (Yes vs. No)				
Unmatched	1.333 (1.028-1.733)	0.032	1.186 (0.907-1.551)	0.211
Propensity score matched	1.281 (1.024-1.774)	0.137	-	-
IPTW matched	1.311 (1.000-1.719)	0.050	1.257 (0.953-1.684)	0.104
Lesion area (Mucosa vs. beyond mucosa)				
Unmatched	3.472 (2.260-5.335)	<0.001	2.213 (1.356-3.610)	0.001
Propensity score matched	4.147 (2.296-7.491)	<0.001	2.343 (1.220-4.500)	0.011
IPTW matched	3.131 (2.017-4.862)	<0.001	1.751 (1.007-3.044)	0.047
Osteoradionecrosis (Yes vs. No)				
Unmatched	2.274 (1.769-2.922)	<0.001	1.488 (1.135-1.957)	0.005
Propensity score matched	2.182 (1.597-2.953)	<0.001	1.567 (1.117-2.197)	0.009
IPTW matched	2.187 (1.676-2.853)	<0.001	1.637 (1.199-2.235)	0.002
Distant to ICA (≤ 5 vs. > 5 mm)				
Unmatched	2.446 (1.898-3.152)	<0.001	1.633 (1.225-2.176)	0.001
Propensity score matched	2.144 (1.652-2.837)	<0.001	1.499 (1.055-2.130)	0.024
IPTW matched	2.198 (1.671-2.892)	<0.001	1.477 (1.072-2.035)	0.017
Primary RT method (GRT vs. IMRT)				
Unmatched	0.715 (0.538-0.951)	0.021	1.009 (0.739-1.376)	0.856
Propensity score matched	0.823 (0.567-1.190)	0.297	-	-
IPTW matched	0.727 (0.530-0.997)	0.048	0.948 (0.677-1.329)	0.785
Reradiation (Yes vs. No)				
Unmatched	2.706 (2.092-3.500)	<0.001	2.071 (1.567-2.736)	<0.001
Propensity score matched	1.751 (1.283-2.389)	<0.001	1.605 (1.162-2.218)	0.004
IPTW matched	2.111 (1.576-2.828)	<0.001	2.003 (1.473-2.734)	<0.001
BMI (≤ 18.5 vs. > 18.5 kg/m ²)				
Unmatched	0.719 (0.544-0.947)	0.019	0.780 (0.590-1.050)	0.151
Propensity score matched	0.534 (0.385-0.741)	<0.001	0.719 (0.493-1.029)	0.071
IPTW matched	0.601 (0.450-0.804)	0.001	0.682 (0.497-0.935)	0.017
NER (≤ 4.15 vs. > 4.15)				
Unmatched	1.814 (1.244-2.095)	<0.001	1.209 (0.896-1.651)	0.231
Propensity score matched	1.812 (1.157-2.247)	0.005	1.144 (0.768-1.727)	0.522
IPTW matched	1.521 (1.158-1.998)	0.003	1.182 (0.855-1.633)	0.312
LMR (≤ 4.15 vs. > 4.15)				
Unmatched	0.474 (0.324-0.695)	<0.001	0.722 (0.466-1.120)	0.146
Propensity score matched	0.570 (0.357-0.911)	0.019	0.678 (0.383-1.201)	0.183
IPTW matched	0.529 (0.355-0.776)	0.001	0.660 (0.405-1.076)	0.096
ALB (≤ 35 vs. > 35 g/L)				
Unmatched	0.385 (0.276-0.537)	<0.001	0.518 (0.362-0.742)	<0.001
Propensity score matched	0.412 (0.267-0.638)	<0.001	0.444 (0.276-0.714)	0.001
IPTW matched	0.504 (0.327-0.776)	0.002	0.568 (0.378-0.851)	0.006
HGB (≤ 110 vs. > 110 g/L)				
Unmatched	0.601 (0.466-0.775)	<0.001	1.040 (0.784-1.379)	0.788
Propensity score matched	0.680 (0.483-0.952)	0.009	1.121 (0.797-1.577)	0.512
IPTW matched	0.708 (0.539-0.930)	0.013	1.099 (0.784-1.497)	0.674
CRP/ALB (≥ 0.31 vs. < 0.31 g/L)				
Unmatched	2.307 (1.728-3.06)	<0.001	1.721 (1.244-2.381)	0.001
Propensity score matched	2.518 (1.722-3.677)	<0.001	1.734 (1.141-2.634)	0.010
IPTW matched	2.020 (1.496-2.729)	<0.001	1.553 (1.088-2.216)	0.015

Table1. Univariate and Multivariate Analysis of OS in Each Cohort