



Recurrent Laryngeal Nerve Paralysis following Thyroidectomy – Analysis of Factors affecting Nerve Recovery

Ramla Mohammad, MD, Gene Huh, MD, Wonjae Cha, MD, PhD, Woo-Jin Jeong, MD, PhD

Department of Otorhinolaryngology-Head & Neck Surgery, Seoul National University College of Medicine, Seoul National University Bundang Hospital, Seongnam, Korea

Introduction

- Thyroidectomy is one of the most frequently performed surgery in the H&N field.
- Even with decreased morbidity and good management of post-thyroidectomy complications, at many times, there are no other option for RLN paralysis but expectant management.
- Nimodipine (calcium channel blocker) is one of the proposed drugs that may accelerate the recovery of the injured nerve.

Objectives

- Risk factors affecting palsy rate.
- Factors affecting rate of recovery (RR) & time to recovery (TTR).
- Effect of post-operative Nimodipine & steroids on RR & TTR

Methods

- 197 patients were retrospectively reviewed from Oct 2016 to Aug 2019 and were followed up for 6 months.
- 289 NAR (nerve at risk).
- Exclusion: pre-op V.C palsy, robo-endo surgery, isthmusectomy.

Table 1. Patients Demographics

Total cases	197
Age mean (range)	49 (23-85)
Gender	
Female	126
Male	71
Procedure	
Total	92
Lobectomy ^a	105
Lymph node dissection	
Central	131
Central + Lateral	26
None	40
IONM use	
IONM(+)	171
None	26
Pathology	
Benign	22
PTC	166
Other malignant tumors ^b	9

IONM: intra-operative nerve monitoring. PTC: papillary thyroid carcinoma

^aLobectomy includes 4 cases of completion thyroidectomy and 2 parathyroidectomies.

^bother malignant tumors: follicular, medullary, anaplastic carcinoma.

Table 2. Multivariate Analysis Between Potential Risk Factors for RLN Paralysis

Variables	Odds Ratio	P-value	95% confidence interval
Age	4.809	.001	[1.888-12.252]
Intra-op ETE	9.035	<.001	[3.336-24.466]
CND	300401839.8	.997	.000

CND: central node dissection, ETE: extra-thyroid extension.

Supplementary Table 3. Multivariate Analysis Between Potential Factors for RLN Paralysis Recovery

variables	Odds Ratio	P-value	95% confidence interval
LOS	.098	.066	[.008-1.163]

LOS: loss of signal.

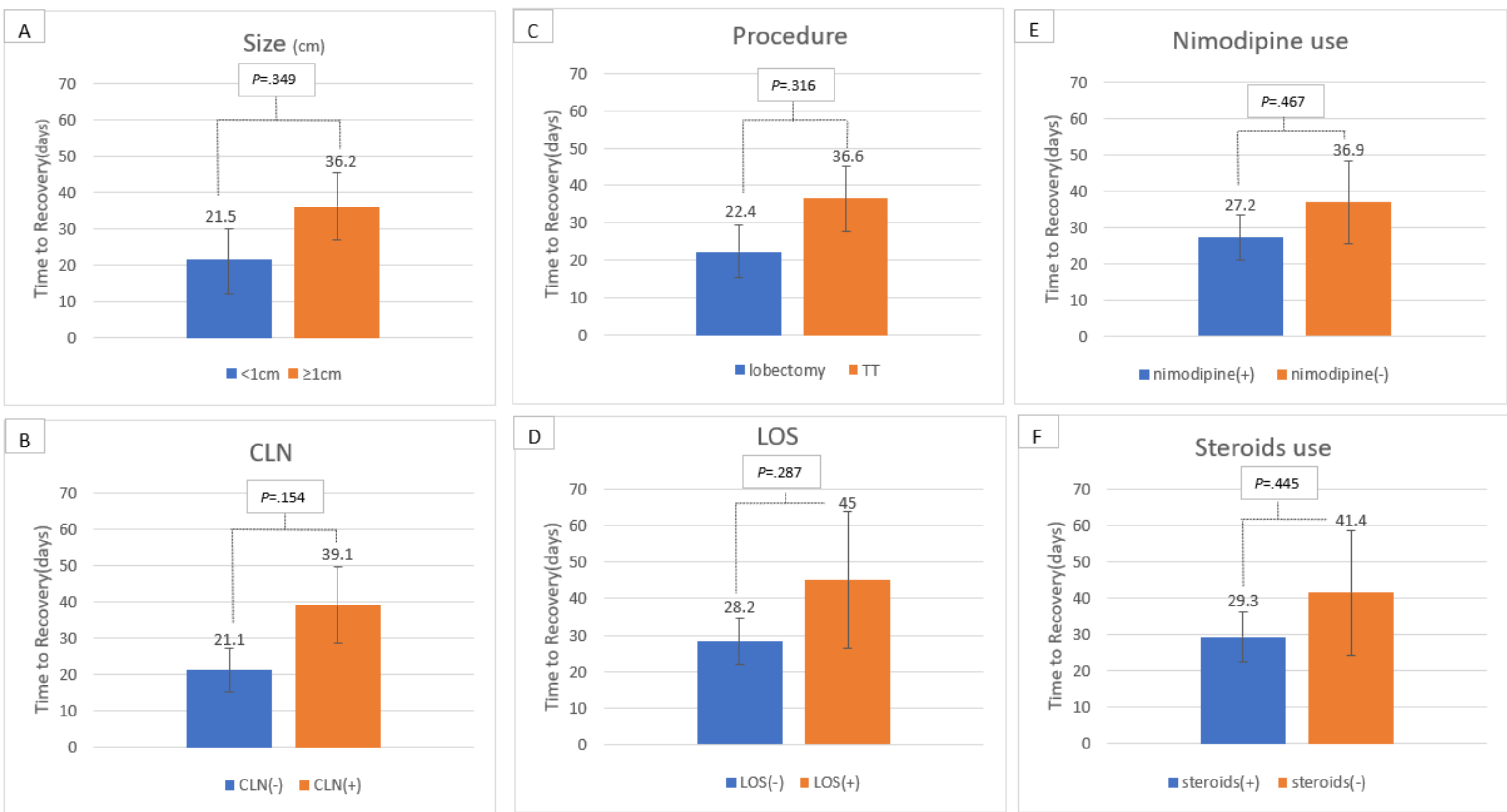


Fig. 2. Representative factors affecting time to recovery (TTR)

Results

- Temporary RLN paralysis rate was 7.9% while 1.7% was permanent.
- Age (OR=4.8) and intra-operative ETE (OR=9.0) were independent risk factors for RLN paralysis.
- No significant results for factors affecting RR.
- The mean time to recovery was 32 days.
- LOS, nimodipine, and steroid use, among others, were factors trending for an impact on the TTR.

Discussion

- Nimodipine and steroids did not affect the rate of paralysis rather it helped in shortening TTR.
- Though not significant, Nimodipine and steroids accelerated TTR by 10 & 12 days, respectively.
- LOS was a predictive factor for RLN paralysis postoperatively and it prolonged nerve recovery by 17 days.
- There are clear limitations due to the small number of events to obtain statistically significant results, and the implication is even less apparent for recovery rate (RR) compared to time to recovery (TTR), but there have not been any untoward effects of the medications which may hinder the use of these interventions.

Conclusion

- With no other option than to wait and see for post-thyroidectomy RLN paralysis, Nimodipine may be a viable option in accelerating the recovery time (TTR), but not recovery rate (RR), in the post-operative setting.
- Larger well-controlled trials are warranted to address the effect of nimodipine along with other factors

Correspondence

Woo-Jin Jeong
Department of Otolaryngology-Head and Neck Surgery, Seoul National University Bundang Hospital.
Email: safar@snuh.org

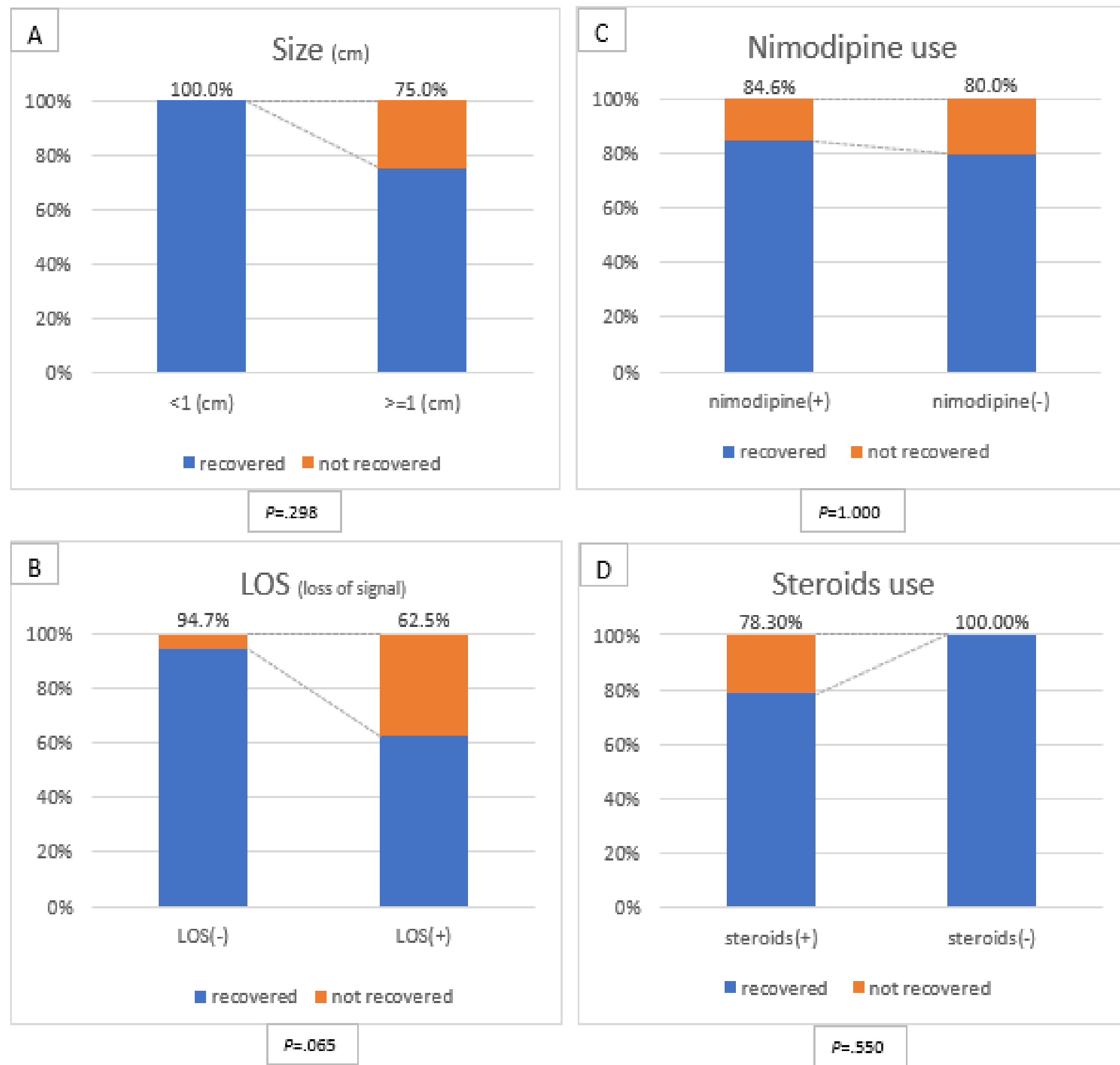


Fig. 1. Representative factors affecting rate of recovery (RR)

References

- Hydman J, Björck G, Persson JK, Zedenius J, Mattsson P. Diagnosis and prognosis of iatrogenic injury of the recurrent laryngeal nerve. The Annals of otology, rhinology, and laryngology 2009; 118:506-511.
- Rosen CA, Smith L, Young V, Krishna P, Muldoon MF, Munin MC. Prospective investigation of nimodipine for acute vocal fold paralysis. Muscle Nerve 2014; 50:114-118.
- Mattsson P, Hydman J, Svensson M. Recovery of laryngeal function after intraoperative injury to the recurrent laryngeal nerve. Gland surgery 2015; 4:27-35.