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Co-existing OSA reduce Nuss surgery efficacy

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Mei-Chen Yang¹

¹Taipei Tzu Chi Hospital



Mei-Chen Yang

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Abstract

Nuss surgery is effective for pectus excavatum (PE), with a recurrence rate of 1.2–27%. Re-do surgery is effective, but still has a 6% failure rate. Patients with obstructive sleep apnea (OSA) experience repetitive PE-associated sternal depression during sleep. As the prevalence of OSA among PE patients is higher than the average, co-existing OSA in PE patients might negatively impact the efficacy of Nuss surgery. This study aimed to evaluate the impact of co-existing OSA on Nuss surgery in patients with PE. Totally, twenty adult patients with PE only and nine patients with PE and OSA were analyzed. Polysomnography was performed before Nuss surgery to evaluate OSA. Sternovertebral distance (SVD) and radiographic Haller index (RHI) were recorded before surgery and at 3, 6, and 24 months postoperatively. The results showed that, post-operatively, percentage changes in SVD in patients with PE only at 3, 6, and 24 months postoperatively were significantly increased compared with those in the patients with PE and OSA (31.1% vs. 14.1% at 3 months; 37.5% vs. 21.4% at 6 months; 42.5% vs. 19.2% at 24 months), while percentage changes in RHI were significantly lower in patients with PE only than in the patients with PE and OSA (-22.9% vs. -9.3% at 3 months; -27.9% vs. -18.7% at 6 months; -30.6% vs. -16.7% at 24 months). The study showed that co-existing OSA might reduce the efficacy of Nuss surgery for patients with PE. We recommended that patients with PE should be evaluated for OSA before surgery and be promptly treated for OSA until making sure the PE does not recur after bal removal.

Troubleshooting

This was a prospective observational comparative study. A total of 42 adult patients with PE who were scheduled for Nuss surgery were recruited from January 2016 to December 2017 at Taipei Tzu Chi Hospital, New Taipei, Taiwan (Fig1). The inclusion criteria were: age 20–45 years; Haller index ≥ 3.0 ; no psychiatric or medical illness; and no use of psychoactive, hypnotic, or illegal drugs. The exclusion criteria were: age less than 20 years or more than 45 years; Haller index < 3.0 ; with psychiatric or medical illness; and with use of psychoactive, hypnotic, or illegal drugs. A total of four patients refused to undergo Nuss surgery, and three declined to participate in the study. Therefore, 35 patients were eventually enrolled, and polysomnography (PSG) was performed on these patients before Nuss surgery to evaluate OSA. After Nuss surgery, two patients were followed-up at another medical center, and four did not return because of overseas work or study commitments. The remaining 29 patients completed all follow-up examinations at 3, 6, and 24 months after surgery and before bar removal and were included in the final analysis. Among the 29 patients, 20 had no OSA (apnea/hypopnea index [AHI] $< 5.0/\text{h}$ on PSG) and were assigned to the control group. The other nine had OSA (AHI $\geq 5.0/\text{h}$ on PSG) and were assigned to the study group.