Intraoperative Ultrasonographic Assessment of Vocal Cord motion following pediatric thyroidectomy in the Era of COVID-19, a double-blind study

Ofir Zavdy[1], Michael Schwarz[2], Dror Gilony[1], Gideon Bachar[1], Hanna Gilat[1], and Roy Hod[1]

[1]Rabin Medical Center
[2]Schneider Children's Medical Center of Israel

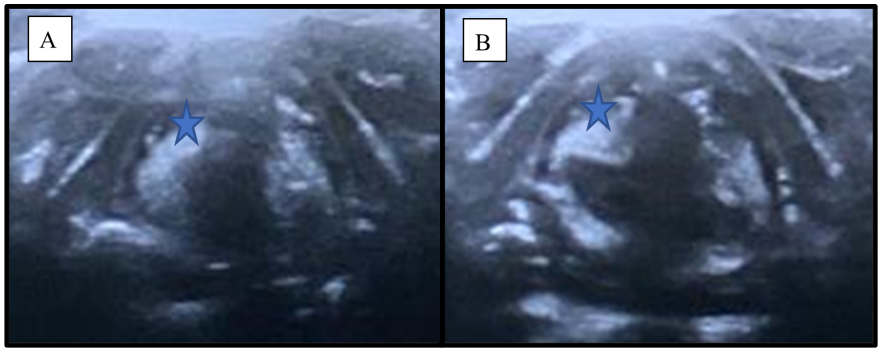
April 3, 2021

Abstract

Unilateral vocal cord paralysis (UVCP) is a known complication of thyroid surgery, due to iatrogenic recurrent laryngeal nerve injury, with reported rates of 2-5% in children. The gold standard for assessing vocal cord function in flexible nasendoscopy (FNE) examination, which is considered high-risk for contraction of the COVID-19 virus. Intraoperative ultrasonographic assessment (IUA) of vocal cord function is a non-invasive and relatively simple procedure, performed in a supine position under general anesthesia. Objectives: To evaluate the validity of IUA modality in children undergoing thyroidectomy, and to compare it to the standard FNE. Design: A prospective double-blind study covering 24 months (March 2019-March 2021). Twenty thyroid lobectomies were performed, during 15 surgeries. Vocal cord function was assessed three times: Preoperatively by FNE, intraoperative (IUA) following extubation, and a second FNE on the first post-operative day. Settings: A tertiary pediatric hospital. Results: The overall accuracy of IUA results in our study was 92%. IUA sensitivity, specificity, positive and negative predictive values were 100%, 89%, 33%, and 100% respectively. Patient's age demonstrated borderline significance ($p= 0.08$). The resident's experience was associated with a better correlation between IUA and FNE results ($p<0.05$). Conclusions: IUA of vocal cord motion has a high accuracy rate for detection of iatrogenic vocal cord paralysis, similar to FNE. It is easily learned by residents, well tolerated by children, and it provides a safe and valid alternative modality while ensuring the safety of the medical staff in treating patients, especially in times of COVID-19 pandemic.

Hosted file

`Main document.pdf` available at https://authorea.com/users/400020/articles/516546-intraoperative-ultrasonographic-assessment-of-vocal-cord-motion-following-pediatric-thyroidectomy-in-the-era-of-covid-19-a-double-blind-study



Hosted file

`Tables.pdf` available at https://authorea.com/users/400020/articles/516546-intraoperative-ultrasonographic-assessment-of-vocal-cord-motion-following-pediatric-thyroidectomy-in-the-era-of-covid-19-a-double-blind-study