Information/ Background

Adenoid hypertrophy is a common problem in children and can lead to upper airway obstruction. Measuring the size of adenoid is rather difficult due to its location in the nasopharyngeal cavity. Thus, many measurement methods have been developed for adenoid size.

Flexible nasopharyngoscopy is an endoscopic method that allows direct visualization of the nasopharynx, the auditory tube, and fossa of Rosenmuller. However, this method is uncomfortable in some children. Whilst, film lateral skull is an accessible method for physicians and seems comfortable for children. Still, its disadvantage of radio exposure may be the side effect.

The aim of this study was to investigate the correlation of adenoid hypertrophy measurement, using lateral skull film and flexible endoscopy with rigid telescope in the operative room.

Materials and Methods

Pediatric patients who presented at the Otorhinolaryngology outpatient clinic with clinical evidence of adenoid hypertrophy and scheduled for surgery were invited to join this study. Children with craniofacial anomaly were excluded. All patients underwent preoperative film lateral skull and flexible endoscopy, with intraoperative rigid telescope.

Flexible endoscopy was performed at the outpatient clinic by pediatric ENT doctor. After general anesthesia was induced. Rigid nasal endoscopy was performed by surgeon. The endoscope was stopped at posterior end of inferior turbinate and video was recorded as MP4 file. The image of adenoid was captured and measured the A/N ratio as percentage of obstruction using Adobe photoshopCS3 program.

Results

The average adenoidal-nasopharyngeal (A/N) ratio from lateral skull film, flexible endoscopy, and intraoperative rigid endoscopy was 72.9, 79.5, and 81.6.

- The A/N ratio from flexible endoscopy compared to intraoperative rigid endoscopy yielded a strong correlation (Pearson’s correlation: 0.791, P<0.001).
- There was a moderate correlation between A/N ratio from lateral skull film and intraoperative rigid endoscopy (Pearson’s correlation: 0.567, P<0.001).
- From linear regression analysis:
  - Intraoperative adenoid measurement was estimated from the result of flexible endoscopy (intraoperative nasal telescopy: 0.72 [flexible endoscopy] +24.47).
  - Intraoperative adenoid size was estimated from lateral skull film (intraoperative nasal telescopy= 0.65 [lateral skull film] +34).

Conclusion

Flexible endoscopy is an accurate method for adenoid measurement and nasopharynx visualization with no radiation exposure. Although less accurate, the benefits of lateral skull film include availability in every hospital for general doctor, and our correlation in this study can be applied to obtain the actual size measurement of adenoid gland.

KEYWORDS: Adenoid hypertrophy, Adenoidal-nasopharyngeal ratio, Lateral skull film, Flexible endoscopy, Intraoperative rigid telescopy