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Case Report

A rare case of congenital adult pharyngeal web causing airway obstruction managed by coblation technology

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ABSTRACT

Congenital pharyngeal web is a rare anomaly almost always diagnosed in the paediatric population due to airway obstruction and feeding difficulties. The combination of congenital oropharyngeal and laryngopharyngeal web in an adult is extremely rare and has not commonly been published in the literature. We experienced a 47-year-old woman undiagnosed with pharyngeal web until difficult intubation upon surgery. A 47-year-old woman diagnosed with right ovarian complex cyst was scheduled for total laparoscopic hysterectomy and bilateral salpingo-oopherectomy. pharyngeal webs were incidentally found during intubation and necessitated a reschedule of surgery and tracheostomy. The patient had no history of dysphagia, weight loss or other symptoms of airway obstruction. Fibre optic laryngoscopic examination revealed a combination of congenital oropharyngeal and laryngopharyngeal webs. Patient denied previous history of caustic agent ingestion, oral airway surgeries, chemoradiation. After 2 days, awake tracheostomy with endoscopic guided coblator assisted excision of pharyngeal web was done first, followed by total laparoscopic hysterectomy and bilateral salpingo-oopherectomy in the same sitting. Coblation assisted excision of the pharyngeal web will allow the airway to be feasible for intubation in the future. Congenital pharyngeal webs are extremely rare findings, especially in adult patients. Prediction of difficult airways preoperatively is necessary to prevent difficult airway situations. Controlled ablation of the pharyngeal web gives a good outcome in terms of less post-operative pain and blood loss.

Keywords: Congenital adult pharyngeal web, Difficult airway, Coblation, Oropharynx, Failed intubation, Laryngopharynx

INTRODUCTION

Pharyngeal webs are either congenital or acquired. Differentiation of congenital and acquired origins is mandatory for better approach and management. Congenital pharyngeal webs arise mostly due to failure of embryological development. Acquired pharyngeal webs arise due to complications of previous oral and airway surgeries, caustic agent ingestion, post-laryngectomy, post-chemoradiation, prolonged intubation, and conditions like head and neck malignancies and Behcet's disease.[1,2] Some pharyngeal and cervical esophageal webs are associated with diseases that cause inflammation and scarring, such as epidermolysis bullosa or benign mucous membrane pemphigoid.[3] Pharyngeal webs are rare congenital anomalies characterized by mucosal bands extending from the posterior pharyngeal wall anteriorly to the glottis, which is the opening between the vocal cords.[4]

Two children with pharyngolaryngeal webs were documented in 1983 by Gerson et al.[5] The webs extend from the lateral borders of the epiglottis to the lateral and posterior pharyngeal walls, framing the glottis with a "keyhole" type of effect. These were the first congenital pharyngeal webs documented in the literature. A second

pharyngeal pouch development failure was identified in two reported cases of congenital pharyngolaryngeal banding in the pediatric population.[6,7] Prior to this report, three adult pharyngeal web cases with dysphagia had been documented in the literature. Most commonly, patients with webs in the hypopharynx present with progressive solid food dysphagia (i.e., difficulty swallowing).[4] An incidental finding of adult pharyngeal web without any prior symptoms has not been published previously in the literature. The possible embryological development anomalies here could be 2nd and 4th pharyngeal arch malformations.

A tracheostomy is a surgical procedure to create an opening in the anterior trachea to facilitate respiration.[8] An awake tracheostomy can be done in a patient without sedation when intubation through the glottis is not possible.[9] Endoscopically guided coblation excision of the pharyngeal web was done in this case. Endoscopy allows better visualization of the structures. The first effective open-tube endoscope was developed in 1853 by Desormeaux. This instrument was used to examine the urethra and the bladder.[10]

The coblation technique involves passing radiofrequency energy through a conductive medium (such as isotonic sodium chloride) and producing a plasma field. By coblation, the medium is dissociated into free sodium ions, which are responsible for the destruction of intercellular bonds, resulting in tissue dissociation.[11] Coblation (controlled ablation) was first discovered by Hira V. Thapliyal and Philip E. Eggers in 1996, and it was initially used in arthroscopic surgeries for athelets in 1996. Nowadays, coblation technology has been widely used in many otorhinolaryngological surgeries like nasal polypectomy, uvulopalato-pharyngoplasty, adenotonsillectomy, tongue base reduction, and cordectomy.[12] Balloon dilatations and CO_2 laser excision have been used for treatment of pharyngolaryngeal webs in previous studies. Ours is probably the second reported case of an adult congenital pharyngeal web excised via endoscopic guided coblation technology. No other developmental anomalies are seen in this patient. In a previously reported case by Katrina et al they used coblation for the first time for the removal of the hypopharyngeal web.[13]

This case describes the approach and management of an incidentally discovered congenital pharyngeal web in an adult patient and the importance of proper airway prediction preoperatively to prevent difficult airway situations.

CASE REPORT

A 47-year-old nulliparous woman with postmenopausal status was admitted to the obstetrics and gynecology department of our hospital with complaints of lower abdominal pain for 6 months. The pain was insidious in onset, intermittent, non-radiating, and dull in nature. The patient had no significant past history. Relevant blood investigations were done, and USG of the whole abdomen revealed a right ovarian complex cyst. The patient was scheduled for total laparoscopic hysterectomy and bilateral salpingo-oophorectomy. During induction of anesthesia, she was diagnosed with oropharyngeal webs and thus could not be intubated. Reversing agents for anesthesia were given, and the patient was shifted back to the ward. Surgery was postponed due to the need for a tracheostomy, and the patient was referred to our ENT (otorhinolaryngology) department for further evaluation of the airway. Fibre optic laryngoscopy revealed four mucosal webs extending from the left posterior tonsillar pillar, uvula, to the posterior pharyngeal wall laterally in the oropharynx, the right base of the tongue to the lateral pharyngeal wall, the left base of the tongue to the lateral pharyngeal wall up to the pyriform sinus in the laryngopharynx, a central web joining these two lateral webs, and rudimentary epiglottttis adherent to the right arye epiglottic fold (Figure.1). These mucosal webs appeared smooth without any ulceration or irregularities. The contrast enhanced CT scan of the neck revealed oropharyngeal webs a shown in Figure 2. The patient was asymptomatic and had no history of dysphagia, airway obstruction, or weight loss. Patient denied history of previous oral and airway surgeries, procedures, caustic agent ingestion, chemoradiation, and head and neck malignancies. Surgery was rescheduled after 2 days, and the patient was kept nil per oral before 6 hours of surgery. The whole procedure was thoroughly explained. The patient was taken to the operating room, where an awake tracheostomy was performed under local anesthesia by the ENT team. A 7.0-mm-sized cuffed, single-lumen portex tracheostomy tube was inserted and inflated. A tracheostomy tube was connected to the ventilator. The oral cavity was exposed with a Boyles Davis mouth gag. A 30-degree rigid endoscope was used for better visualization (Figure 3). The laryngeal inlet and vocal cords were visible. A coblation-assisted excision of mucosal webs from the oropharynx and laryngopharynx was done (Figure 4). Rudimentary epiglottis was excised along with webs. The airway assessment was done by the anesthesia team. Enough space has been created for endotracheal intubation in the future. Hemostasis achieved. The OBGS surgeons proceeded with total laparoscopic hysterectomy and bilateral salpingo-oophorectomy in the same sitting.

Postoperatively, the patient was shifted to a high-dependency unit for constant care and monitoring. A cold liquid diet was started 6 hours after reversal of anesthesia, then advanced to a solid diet on the 2nd post-operative day. Regular tracheostomy care was given. Tracheostomy tube decannulation and strapping of the stoma site were done on the second postoperative day. Regular post-operative care and dressings were done. The patient was shifted to a general ward. Tracheostomy stoma site closure was done using 3-0 ethilon. The patient was discharged on the fifth post-operative day in

hemodynamically stable condition with proper wound care advice at home and medications.

A fibre optic laryngoscopy was done after 1 month of surgery. A postoperative view after removal of the pharyngeal web is shown in Figure 5.

The patient recovered well without any complications in the 6-month follow-up period.

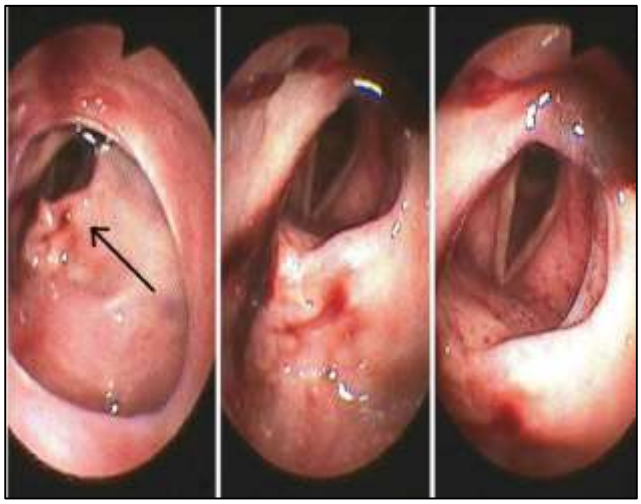

Figure 1: Preoperative fibre optic laryngoscopic findings of the pharyngeal webs.

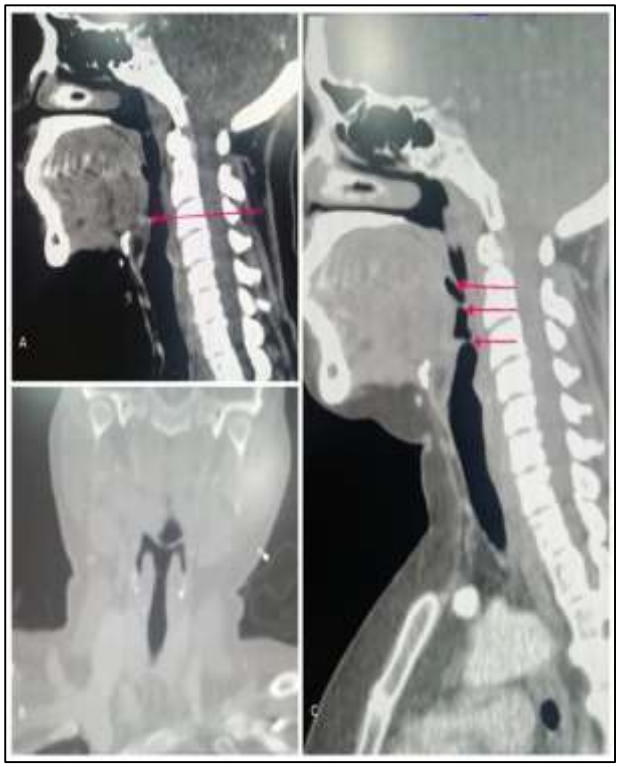

Figure 2 (A-C): Contrast enhanced CT neck findings. Rudimentary epiglottis on sagittal section, a pharyngeal web seen on coronal section, three pharyngeal bands in oropharynx on sagittal section.

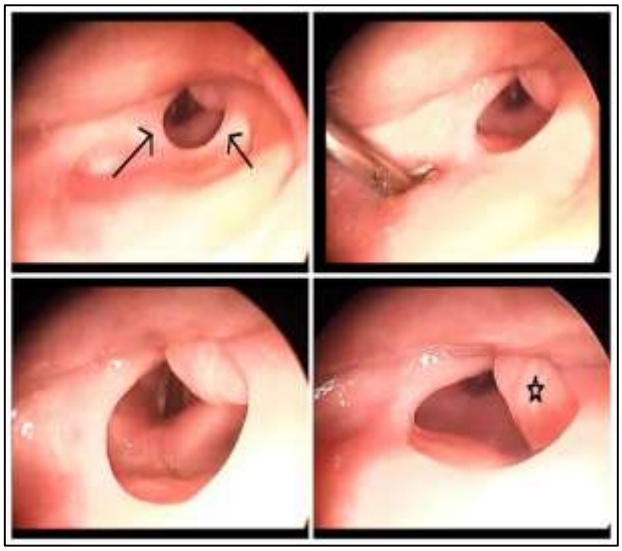

Figure 3: Intraoperative view of pharyngeal webs, black star showing rudimentary epiglottis.

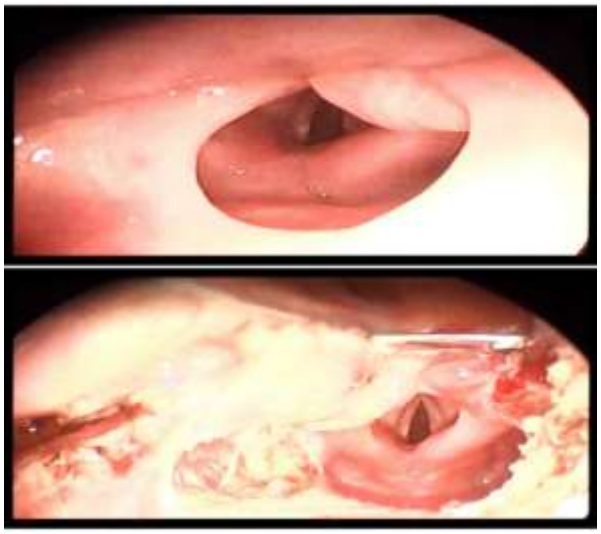

Figure 4: Preop and intra operative view (during coblation assisted excision) of pharyngeal webs.

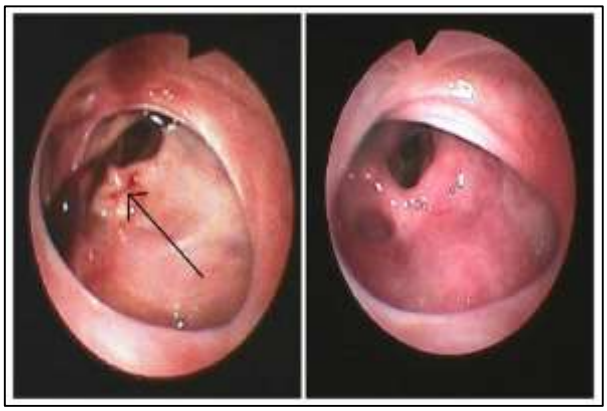

Figure 5: Preoperative (Black arrow showing the webs) and post operative (after 1 month) fibre optic laryngoscopic findings.

DISCUSSION

We experienced an extremely rare case of adult congenital pharyngeal web. Pharyngeal web is a rare condition mostly diagnosed in the pediatric population due to airway obstruction, feeding difficulties, or associated syndromes. Congenital pharyngeal web was first reported in the pediatric population by Gerson et al. These children had intermittent airway obstructions.[5] After a decade, a second case of congenital pharyngolaryngeal web was reported in 1995. A child suffering from diffuse pulmonary fibrosis presented with multiple congenital pharyngolaryngeal bands whose soft palate was fused with the posterior pharyngeal wall. A muscular band replaced the facial pillars on either side, from the base of the tongue to the lateral pharyngeal walls, without any tonsil or adenoid tissue. The epiglottis was tethered to the posterior pharyngeal wall by bands from its lateral aspects.[7] A unilateral pharyngolaryngeal band in a newborn was reported in another study in a patient who presented with severe airway obstruction and feeding difficulties. The band extended from the right postero-inferior part of the nasopharynx to the right lateral margin of the larynx. Faucial pillars and tonsils were absent on the right side.[6] A second pharyngeal pouch development failure was identified as the origin of pharyngeal bands in both of these cases.

Following this a few cases of pharyngeal webs arising from developmental failure of the 4th or 6th arches in syndromic children were also described. The endoscopic CO_2 laser technique was used as the treatment modality for the removal of these webs.[4] To the best of our knowledge, there have been only two cases of congenital pharyngeal web reported in adults. After ruling out the other causes, the possible embryological development anomalies in our case could be 2nd and 4th pharyngeal arch malformations.

Congenital pharyngeal web in an adult was first reported in a 60-year-old woman who had long-standing gastroesophageal reflux disease in 2016.[14] The patient had solid food dysphagia without weight loss, and esophagoscopy revealed two hypopharyngeal webs, dilated later with 20-FR balloons. A second pharyngeal web in an adult of congenital origin was reported recently in 2020. A woman in her mid-40s with a history of Crohn's disease, anemia, and esophagitis presented with solid food dysphagia and weight loss. A barium swallow revealed an incomplete cricopharyngeal web. The author used coblation technology for the clean excision of the hypopharyngeal web.[13]

An elderly woman, a known case of Behcet's disease, was diagnosed to have pharyngeal webs, and she had been treated for many years with esophageal dilations for an upper esophageal web. The cause remained unclear and could be of acquired origin.[2]

Flexible fibreoptic laryngoscopy, performed endoscopically, is the most common examination used to visualize abnormalities, remove small growths, and biopsy tissues from the oropharynx, hypopharynx, and larynx.

Coblation is a non-heat-driven process of soft tissue dissolution using bipolar radiofrequency energy in a conductive medium like normal saline. When current from a radiofrequency probe passes through a saline medium, it breaks the saline into sodium and chloride ions. These highly energized ions form a plasma field that is sufficiently strong to break organic molecular bonds within soft tissue, causing its dissolution.[12] Various techniques have been reported for the removal of pharyngeal webs. For example: CO_2 laser excision via direct laryngoscopy balloon dilatation of webs and coblation-assisted removal.[4,2,13,14] The coblation technique has the advantages of less post-operative pain, less blood loss, and clear excision of mucosal tissues. When intubation through the glottis is not possible, an awake tracheostomy can be done in a patient under local anesthesia without sedation.[9]

Decannulation is a procedure where the tracheostomy tube is permanently removed with the intention of closing the stoma site. The incidental finding of a combined oropharyngeal and laryngopharyngeal web in an otherwise healthy adult is very rare.

CONCLUSION

In the adult population, combined congenital oropharyngeal and laryngopharyngeal webs are extremely rare. This case describes the approach and management of an incidentally discovered congenital pharyngeal web in an adult patient. It also describes the importance of proper airway prediction preoperatively to prevent difficult airway situations. Endoscopically guided controlled ablation is the safest and most effective treatment for pharyngeal webs because of improved visualization, lower morbidities, and reduced post-operative pain and blood loss.

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