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Endoscopic management of Esophageal Squamous Papilloma: Insights from a Case Report and Literature Review

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Abstract

Esophageal squamous papilloma (ESP) is a rare epithelial tumour first described in 1959, with a prevalence ranging from 0.01% to 0.45%. Typically asymptomatic, it is often incidentally detected during upper gastrointestinal endoscopy, commonly in patients aged 43 to 50. Its precise ethology remains unclear, though chronic mucosal irritation and HPV infection are implicated. While benign in nature, recent reports suggest a potential for malignant transformation, especially in cases with multiple or large lesions. Endoscopic removal is the preferred management strategy, with mucosectomy reserved for larger lesions and esophagectomy for extreme presentations unresponsive to conservative therapy. We present a case report of a 58-year-old female with progressively worsening dysphagia, successfully managed with endoscopic mucosal resection of a 2cm lesion. Histopathological analysis confirmed esophageal squamous papilloma, highlighting the importance of surveillance in such cases. Although rare, documented cases of malignant potential underscore the necessity for vigilance in managing ESP. Further prospective studies are warranted to elucidate its natural history and optimize treatment strategies.

Keywords: Endoscopic management; Esophageal squamous papilloma; Epithelial tumour; Gastroesophageal; Worsening dysphagia

Abbreviations: ESP: Esophageal Squamous Papilloma; GERD: Gastroesophageal Reflux Disease; UGE: Upper Gastrointestinal Endoscopy; ECOG: Eastern Cooperative Oncology Group; EGD: esophagogastroduodenoscopy; EoE: Eosinophilic Esophagitis; SCC: Squamous Cell Carcinoma; SCP: Squamous Cell Papilloma; VEGF: Vascular Endothelial Growth Factor

Introduction

Esophageal squamous papilloma (ESP) is a rare epithelial tumour first described by Adler et al. in 1959 [1]. Its prevalence rate is estimated at 0.01 to 0.45% according to the results of autopsy and endoscopic studies [2]. Typically asymptomatic, ESP is frequently detected incidentally during upper gastrointestinal endoscopy (UGE) [3]. Its onset commonly occurs between the ages of 43 and 50, with a variable male-to-female ratio [4]. Its precise pathogenesis remains elusive, though chronic mucosal irritation (such as gastroesophageal reflux disease (GERD), chronic food impaction, alcohol consumption, cigarette smoking, and prior gastroesophageal surgery) along with HPV infection are suggested as primary etiological factors. HPV positivity rates have been reported to range from 0% to 87.5% [5,6]. While ESP is considered benign neoplasia, recent reports suggest potential malignant transformation possibly associated with HPV [1,7]. Endoscopic removal stands out as the safest approach for managing ESP. Currently, there are no established guidelines for the long-term follow-up of these lesions, primarily because recurrence is rare [8] . This article presents a case report of esophageal squamous papilloma, providing a concise overview of its clinical manifestations, pathological characteristics, and treatment modalities.

Case Presentation

A 58-year-old female with a history of gastroesophageal reflux disease (GERD) and arterial hypertension presented with a chronic and progressively worsening structural dysphagia for solid foods over a three-year period. On clinical examination, the patient was in good general condition with an Eastern Cooperative Oncology Group (ECOG) performance status of 0, exhibiting no signs of malnutrition, and no palpable masses or lymphadenopathy. Laboratory tests were within normal rages, including creatinine

levels (7mg/dl), blood electrolytes (Na 140mEq/l , K 4.2Eq/l), haemoglobin (15g/dl), albumin level (45g/l), white blood cell count (4800/µl), and eosinophil count (100/µl). During the esophagogastroduodenoscopy (EGD), a budding esophageal mucosa was observed near the gastroesophageal junction. Subsequent biopsy revealed histopathological evidence of esophageal squamous cell papilloma. It was decided to monitor the lesion clinically and via endoscopy. After two-year interval, the patient reported worsening dysphagia.

Another UGE was conducted, revealing a sessile, micro-budding, polypoid formation measuring 2cm in size was situated in the lower esophagus near the Z line (Figure 1). The lesion was excised by endoscopic mucosal resection using a diathermic loop. Histopathological analysis confirmed the presence of esophageal squamous cell papilloma, with no evidence of malignancy and clear resection margins. Notably, HPV was not detected in the specimen (Figure 2). Overall, the patient experienced an uneventful postoperative course, characterized by complete resolution of symptoms and restoration of normal esophageal function. An upper endoscopy performed sex months after resection revealed 2 residual clips and a millimetric elevation of cardiac mucosa without any probable recurrence (biopsy samples were obtained) (Figure 3). Histological analysis showed cardiac mucosal hyperplasia without any metaplasia or signs of dysplasia (Figure 4).

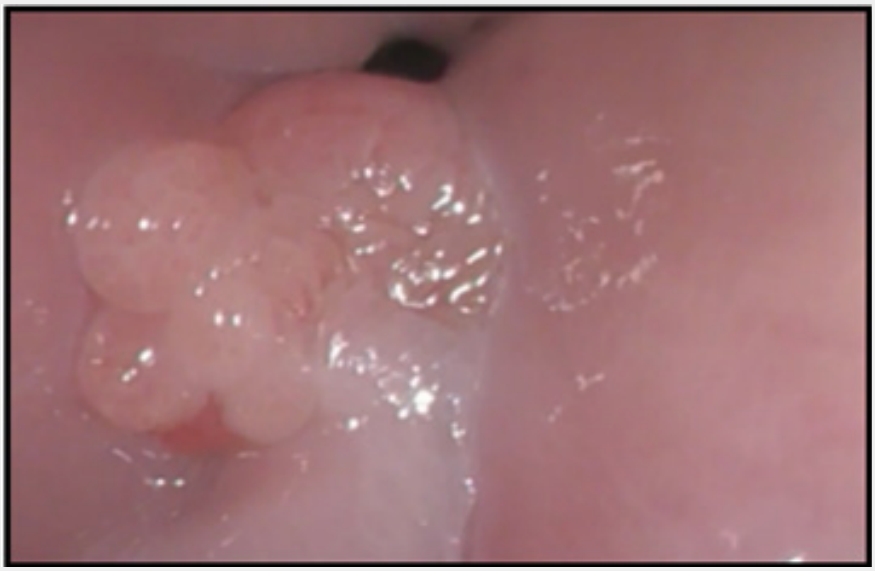

Figure 1: Esophageal squamous papilloma on upper endoscopy, a sessile, micro-budding, polypoid formation measuring 2cm.

Figure 2: Specimen of squamous papilloma of Esophagus.

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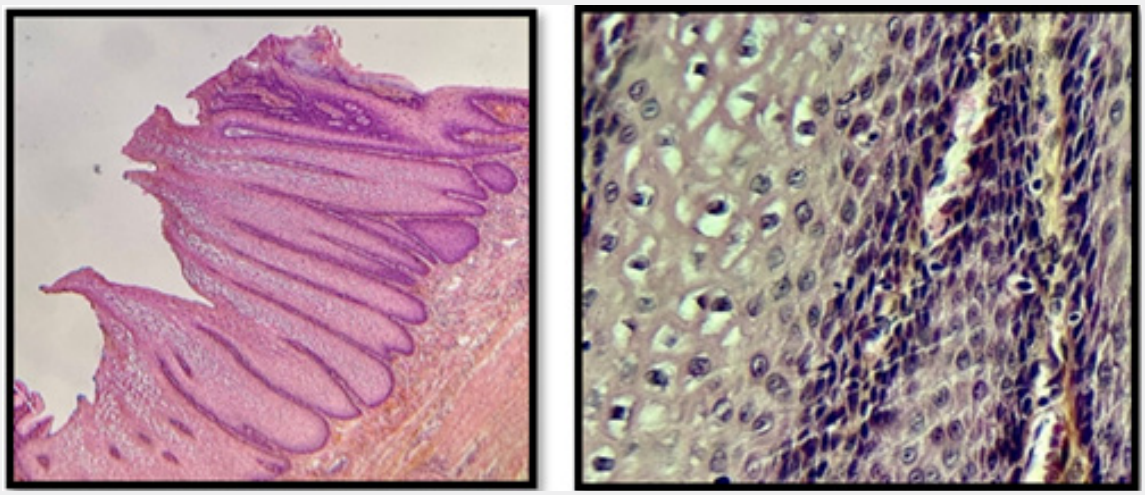

Figure 3: A fibrovascular core branching out from the lamina propria forming finger-like projections surrounded by hyperplastic squamous Epithelium (HES x 4). On higher power view, the tumour cells show no significant cytologic atypia (HES, x 40).

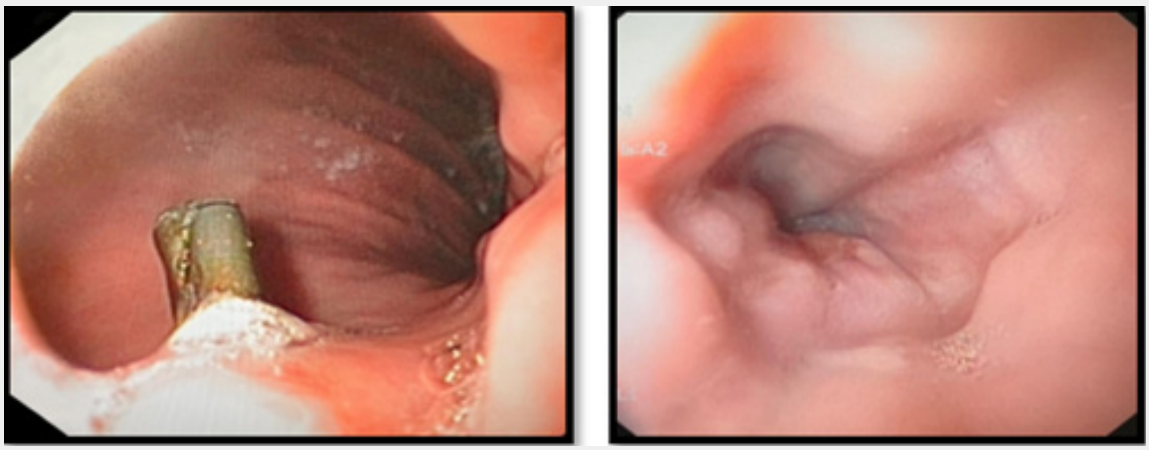

Figure 4: Upper digestive endoscopy performed sex months after resection showed 2 residual clips and a small cardiac mucosal elevation without any signs of recurrence or malignancy.

Discussion

ESP is a rare benign epithelial tumour [9] initially anatomically described in 1927 by Patterson et al. and histologically verified in 1959 by [10]. The reported prevalence observed during endoscopy in the literature has varied from 0.01% to 0.45% [11]. It is typically diagnosed most frequently in patients aged 43 to 50 years, with the male-to-female ratio being variable [12]. Concerning The geographic distribution of this lesion There is a variable data reported in literature with a high prevalence in Europe accounting for approximately 75% of all cases had been reported [13]. It is mostly a single lesion founded incidentally on UGE commonly located in the distal esophagus and rarely exceeded 1cm in diameter [14]. The ethology and pathogenesis of ESP remain uncertain; however, plausible hypotheses include chronic mucosal irritation attributed to underlying inflammatory conditions like GERD. This hypothesis might elucidate why two-thirds of reported cases of ESP are localized to the lower third of the esophagus [15]. The second proposed etiopathogenetic factor is HPV infection. Previous studies have reported varying prevalence rates of HPV infection in ESP, ranging from 0% to 87.5% [11], There are over 100 types of HPV, classified into high-risk and low-risk types based on their oncogenic potential [16]. In ESP patients who test positive for HPV, the most frequently encountered variants are low-risk HPV 6 and 11 [10]. It is hypothesized that a preexisting oropharyngeal HPV infection could potentially migrate to the esophageal epithelium due to the contiguous nature of the epithelial lining between these two anatomical structures [17].

The prevalence rate of ESP in adults with eosinophilic esophagitis (EoE) is 4%, which surpasses that reported in the

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general population. This finding lends support to the hypothesis implicating mucosal inflammation and irritation as driving mechanisms in the development of ESP [18]. For our patient, her past medical history indicates chronic GERD, which can explain the pathogenesis of the ESP and primarily its localization in the lower oesophagus. ESPs are frequently asymptomatic; however, they may manifest with various clinical presentations such as pyrosis, epigastric discomfort, and dysphagia [19,12]. In our case, the patient reported progressive structural dysphagia for solids that has been evolving for 3 years. Endoscopically, ESPs typically appear as whitish-pink, wart-like exophytic projections. These lesions are commonly solitary, smaller than 5mm in size, but larger and multiple lesions can also occur [11,15]. Some authors have documented cases of multiple lesions, although esophageal papillomatosis remains relatively rare, with only a few reported cases in the literature [20]. Narrow band imaging (NBI) aids in the detailed evaluation of the mucosal surface of squamous cell papilloma, revealing that micro vessels within the lesion are not dilated [21].

Histological examination typically reveals a fibrovascular core extending from the lamina propria, forming finger-like projections without invading the submucosa. These projections are often surrounded by pronounced neutrophil infiltration and covered by acanthotic squamous epithelium [3,22]. While the majority of ESPs appear benign, there have been descriptions of malignant potential in some studies, although this remains a topic of debate and controversy [7]. However, the risk of malignancy appears to be elevated in patients with multiple or a large lesion [6]. It is hypothesized that HPV, particularly high-risk strains, may contribute to the malignant transformation of ESP [15]. There is currently no scientific evidence supporting an elevated risk of squamous cell carcinoma (SCC) in individuals with ESP, and there is a lack of consensus regarding the necessity for endoscopic surveillance in these cases [1]. In the majority of cases, A single ESP can be effectively removed using endoscopic biopsy forceps [21], mucosectomy is typically reserved for larger lesions of esophageal squamous cell papilloma (SCPs), while esophagectomy may be considered in extreme presentations that do not respond to more conservative therapeutic approaches [3]. We recommend the endoscopic removal of these lesions because, although rare, there are documented cases demonstrating malignant potential. The management of multiple esophageal lesions is often challenging, due to paucity of reported cases, despite that endoscopic resection, laser removal, radiofrequency ablation, and cryotherapy have all been utilized with variable rates of failure and recurrence [13]. For patients with extensive ESP, especially when associated with dysplasia or progression to carcinoma, surgical resection such as esophagectomy may be necessary [14].

In case of respiratory papillomatosis, many Adjuvant therapies were studied and reported. Their aim is to minimize recurrences, complications, and reduce or eliminate the need for future surgery [23]. Various adjuvant medical therapies have failed, the most widely et recently accepted is bevacizumab, recombinant humanized monoclonal antibodies that target vascular endothelial growth factor (VEGF) to inhibit angiogenesis. Recent studies and clinical trials have indicated that systemic bevacizumab may offer significant benefits for patients with advanced, treatment-resistant papillomatosis [24]. There is no evidence that highlight the efficient of this new treatment paradigm for esophageal squamous cell papilloma. In our case, the lesion was successfully managed by endoscopic mucosal resection, leading to resolution of symptoms. Histological examination confirmed squamous cell papilloma without any signs of malignancy [25] (Table 1).

Table 1: Comparison of studies on esophageal squamous papilloma published in literature.

Authors (Year)	Country	Number of Patients	Prevalence (%)	Mean Age (y)	Female/ Male	Mean Polyp Size (mm)	Dominant Location (%)	HPV (%)
Takeshita [2] (2006)	Japan	35	0.2	59.2	21/14	5	Mild (52)	10.4
Bohn [7] (2008)	Mexico	18	NR	46.3	14/4	3-7	Upper (58)	87.5
Tsai [21] (2015)	Taiwan	20	NR	49	17/3	NR	NR	NR
d'Huart [1] (2014)	France	78	0.01	50	34/44	3	Lower (93.6)	7.7
Wong [15] (2016)	Taiwan	24	0.42	48.9	20/4	4	Mild (57)	NR
Pantham [17] (2016)	USA	60	0.21	51	20/31	5-12	Lower (58)	15
Jideh [25] (2017)	Australia	16	0.23	52	10/6	3.8	Mild (100)	NR
Ekin [9] (2021)	Turkye	51	0.44	42.2	26/25	3.47	Mild (51)	NR

Conclusion

Esophageal squamous papilloma presents a rare significant clinical entity with potential implications for malignant transformation. Our case report, combined with a comprehensive literature review, underscores the importance of vigilance in managing ESP, especially in cases with multiple or large lesions. While endoscopic removal remains the preferred management strategy, further prospective studies are needed to elucidate

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the natural history of ESP and optimize treatment strategies. With continued research and clinical vigilance, we can better understand and effectively manage this uncommon but potentially consequential condition.

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