



## A RETROSPECTIVE STUDY OF UNUSUAL FOREIGN BODY BHARUT IN UPPER AERO-DIGESTIVE TRACT SEEN IN WESTERN RAJASTHAN.

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### KEYWORDS :

#### Introduction

Foreign body aspiration is a very serious and life-threatening emergency. Swallowing of foreign bodies is most common among paediatric patients. Taking into account the risk of infection and perforation, it often requires removal under conditions of maximal safety and minimal trauma, especially for short/blunt and sharp-pointed objects (1,2).

Bharut is the seed of the grass *Cenchrus biflorus*. *Cenchrus biflorus* (Indian sandbur, Gallon's curse, burrgrass, Haskanit Kishin , bhurut ), in the Poaceae family, is an important annual grass species in drought-prone areas of arid and semi-arid ecosystems.<sup>3,4,5</sup> *C. biflorus* is native throughout tropical Africa, extending eastwards through Arabia and Iran to Pakistan and India. In India it is found predominantly in western Rajasthan in desert area like Jaisalmer, Bikaner, Bikaner, Churu. People call it 'BHRUNT' in local language. BHRUNT is a small thorn having multiple spikes.

It is found in dense clumps in cultivated fields, pastures, roadsides, dry areas, sandy dunes or barren sandy areas, desert peripheries, wild cultivation and fallow, waste areas or otherwise disturbed areas where annual rainfall ranges between 250 and 650 mm. Flowering and seed production occurs from July to September in its native areas. *Cenchrus biflorus* is a loosely tufted annual grass. The inflorescence is a spike-like panicle. Seeds are arranged as 1–3 spikelets per fascicle enclosed in prickly bristles attached to a stem called a rachis and have long spines with erect inner spines which are fused at the base while outer spines are shorter and spreading.

*Cenchrus biflorus* was used for fodder and forage purposes due to its rapid vegetative growth.

Its spiny seeds are easily dispersed by wild and domesticated animal hair as well as farm machinery which facilitate rapid spread<sup>6</sup>. Furthermore, the spiny burrs can cause injury to the mouth, nose, eyes and stomach of humans<sup>6,7,8</sup>. Its barbed spikelets are responsible for such wide dispersal by adhering to animal hair and human clothes. Humans can accidentally ingest it either while removing spikelets from clothes or with food and water containing bhurut seeds. Due to its sharp spines it gets stuck in upper aerodigestive and seldom reaches the esophagus.

The objective of this retrospective study was to describe a case series of unusual foreign body Bhurut which is seen during harvesting season in western Rajasthan.

#### Materials and methods

This is a retrospective study of 37 patients presenting with history of either aspirating or ingesting a foreign body Bhurut at the Department of ENT, Sardar Patel Medical College, Bikaner, Rajasthan, over a period of 3 years from January 2019 through December 2021. For the purpose of the study, patients were subjected to a detailed history and

clinical examination. As indicated, patients were subjected to rigid endoscopic assessment and forceps removal of the foreign bodies. The techniques that were used for the removal of foreign bodies include the following:

1. Opd procedure in 12 patients: it was used for foreign bodies lodged in the faucial tonsils, base of tongue and vallecula. It was done under local anesthesia using lignocaine 10% sprays. A Tilly's forceps was used to remove foreign body.

2. Direct laryngoscopy and forceps removal in 25 patients : this procedure was done under GA. All patients who underwent procedure under GA were observed postoperatively for 24 hours and antibiotics were given for 7 days along with analgesics. The medical records of the patients were analysed and data was collected using a structured questionnaire. Questionnaire included information such as age, sex, anatomical lodgement of foreign body, signs and symptoms, duration of lodgement before confirmation and removal.

#### Results

Among 37 patients, bhurut was found in larynx in 19 (51.35%) patient and pharynx in 18 (48.64%) patients. The predominance of males was observed in bhurut ingestion with 22 (59.45%).

Most patients 32 (86.48 %) of bhurut ingestion belongs to >20 year age group with age ranging from 14 to 60 years. Foreign body (FB) ingestion is a frequent occurrence in children with a peak in children older than 3 years [4, 5]. In our study bhurut ingestion was more common among adults who work as farmers.



**Fig 1 showing thorn with multiple spikes (bhurut)**

**Fig 2 showing cenchrus biflorus plant**

**Table 1**

**Demographic distribution of case study**

| Age group wise distribution |    | Total  |
|-----------------------------|----|--------|
| <20years                    | 5  | 13.51% |
| 21-30 years                 | 9  | 24.32% |
| 31-40 years                 | 17 | 45.94% |

|                        |    |        |
|------------------------|----|--------|
| 41-50 years            | 4  | 10.81% |
| 51-60 years            | 2  | 5.40%  |
| Mean age               |    |        |
| Sex wise distribution  |    |        |
| Male                   | 22 | 59.45% |
| Female                 | 15 | 40.54% |
| Area wise distribution |    |        |
| Rural                  | 29 | 78.37% |
| Urban                  | 8  | 21.62% |

As per demographic status maximum patients of bhurut ingestion belong to rural area 29 (78.37%).

The usual time of presentation in patients with bhurut in aerodigestive tract varied from 3 h to 5 days. In 33 (89.18 %) cases, diagnosis was formulated within 3–6 h after the ingestion and in remaining 4 (10.81 %) cases delay of greater longer than 24 h was reported.

Among the patients, the most common symptoms were hoarseness of voice 12 patients (32.43 %), drooling of saliva 5 (13.51 %), foreign body sensation 15 (40.54 %) and dysphagia 11 (29.72 %). About 5 (13.51 %) patients were asymptomatic.

**Table 2 Signs And Symptoms Of The Case Study.**

| S no | Symptom and signs      | Number | percentage |
|------|------------------------|--------|------------|
| 1    | Hoarseness of voice    | 12     | 32.43%     |
| 2    | Dysphagia              | 11     | 29.72%     |
| 3    | Drooling of saliva     | 5      | 13.51%     |
| 4    | Foreign body sensation | 15     | 40.54%     |
| 5    | Asymptomatic           | 5      | 13.51%     |

The commonest site of lodgement in FB digestive tract was larynx 19 cases (51.35 %) with laryngopharynx 7 cases (18.91 %), oropharynx 5 cases (13.51 %), hypopharynx 5 cases (13.51 %) and cricopharynx 1 case (2.70%). (Table 3).

In pharynx 2 cases had FBs lodged in the tonsils (5.40%), 3 cases had FB in the base of the tongue (8.10%), 7 in the vallecula (18.91%).

In larynx 12 FBs were on vocal cord (32.43%), 7 FBs on AE fold (18.91%).

**Table 3 Distribution of cases as per site of lodgement**

| Site                      | Number | percentage |
|---------------------------|--------|------------|
| Oropharynx                |        |            |
| tonsil                    | 2      | 5.40%      |
| Base of tongue            | 3      | 8.10%      |
| valecula                  | 7      | 18.91%     |
| Hypopharynx               |        |            |
| Posterior pharyngeal wall | 2      | 5.40%      |
| postcricoid               | 1      | 2.70%      |
| Pyriform sinus            | 2      | 5.40%      |
| cricopharynx              | 1      | 2.70%      |
| Larynx                    |        |            |
| Vocal cords               | 12     | 32.43%     |
| AE Fold                   | 7      | 18.91%     |

The mode of management in 12 patients (32.43%) with FB in oropharynx was tilley forcep under local anaesthesia while for 25 patients (67.56 %) with FB in hypopharynx, larynx and cricopharynx was direct laryngoscopy and rigid oesophagoscopy and forcep removal under general anaesthesia.

There were no postoperative complications in 34 (91.89 %) cases, remaining 4 (10.81 %) patients had hoarseness of voice due to edema of vocal cord.

## DISCUSSION

Foreign body impaction in the upper airway and digestive tract has been a problem since the earliest of reported history. The foreign body spectrum was defined by Jackson as an object or substance foreign to the location where it is found. He classified them as exogenous and endogenous. An infinite variety of foreign bodies may be inhaled or swallowed. Groundnut, castor seed, pieces of brick, stones, earrings, pins and whistles are some of the common foreign bodies aspirated

into the airway whilst fish bone, mutton piece, chicken bone and coins are the common foreign bodies swallowed into the food passage. Carelessness of parents (in case of children), poor vision, mental infirmity, drug addiction and rapid eating are some of the factors responsible for this. Dentures, excessive alcohol ingestion and intake of markedly cold fluids have also been incriminated in the literature.

This retrospective study identified 37 patients admitted to the hospital with foreign object bhurut ingestion between January 2019 and December 2021. The age of patients ranged from 9 years to 60 years with mean age = 34.4. The male to female ratio of these patients was nearly 1.4:1. After obtaining the initial history and performing a physical examination all patients underwent an ENT and endoscopic evaluation. In our study most common site of bhurut was vocal cords and AE fold, 12 patients (32.43%) 7 patients (18.91%) respectively. Other less common sites were 7 patients (18.91%) had bhurut impaction in valecula, 3 cases (8.10%) at base of tongue, 2 cases (5.40%) at tonsils and 1 case (2.70%) in cricopharynx. In a study of sharp foreign body like fish bone impaction in the esophagus showed that a majority of the foreign bodies were detected in the oral cavity or laryngopharynx (69%) mainly in the palatine tonsils, base of the tongue, valleculae, and the pyriform sinus.<sup>[9, 10, 11]</sup> Some authors suggested inspecting the tonsils first prior to evaluating another pharyngeal regions<sup>[12]</sup>

The signs and symptoms of bhurut ingestion depend on the site of lodgement. The first symptoms can be FB sensation and localized pain.<sup>[13]</sup> In some studies on pharyngeal foreign body the sensation of the presence of a FB is the only symptom found to correlate with the site of impaction.<sup>[14, 15]</sup> In our study Most common symptom was foreign body sensation in throat in 15 patients (40.54%) followed by hoarseness of voice in 12 cases (32.43%). Other Symptoms range from mild odynophagia, dysphagia, drooling of saliva and foreign body sensation in throat. These symptoms are caused due to irritation by spikelets of bhurut. 5 patients (13.51%) were asymptomatic but had positive history of bhurut ingestion, which was confirmed on examination. 2 patients (5.40%) who came with hoarseness of voice but without any history of bhurut ingestion. Endoscopic examination was done and bhurut was confirmed on vocal cord. In other studies the symptoms of esophageal FB diseases are FB sensation, sore throat, dysphagia, odynophagia, retrosternal pain, retching, and vomiting [16, 17, 18, 19].

The initial assessment of the patient coming with history of complaining of an FB sensation in the neck consists of oral cavity examination with a tongue depressor. The next step is direct laryngoscopic examination, followed by flexible or rigid endoscopy [20]. Although flexible endoscopy of ENT has a lower risk of perforation and a high success rate [21], rigid endoscopy has some advantages for FB impacted in the upper esophageal sphincter or hypopharyngeal region [22]. Similarly In our study in all the patients coming with bhurut ingestion oral cavity was examined initially followed by endoscopic examination. Foreign body I oropharynx was removed under local anesthesia by tilley's forceps in among 15 patients. In rest of the 22 patients foreign body was removed under general anesthesia by direct laryngoscopic examination.

Most of the patients 33 (89.18%) came within 3-6hrs if foreign body ingestion. 4 patients (10.81%) came 24 hrs after foreign body ingestion. The main reason of late presentation was low socioeconomic status and lack of awareness among patients. All the 4 patients with delayed presentation had hoarseness of voice and dysphagia due postoperative edema. Sharp foreign bodies has a higher risk of severe complications if the treatment is delayed beyond 24 hours<sup>[23]</sup> and a high frequency of bleeding compared to other FB diseases<sup>[24]</sup>. Some authors recently recommended a more aggressive treatment for patients with high-risk status, ingestion of a sharp object or battery into the esophagus<sup>[25]</sup>. They recommended emergent (preferably within 2 hours, but within 6 hours at the most).

## CONCLUSION:

The removal of the bhurut under local or general anaesthesia achieves good results. Awareness in community regarding proper handling and avoiding exposure to bhurut will help in reducing the incidence of the problem

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