Introduction
Swelling of the tongue is known as macroglossia or glossomegaly. It is a rare phenomenon and its cause often remains unknown [1,2]. The aetiology of acute swelling of the tongue can be roughly divided into four categories: haemorrhage, infection, infarction and oedema [1].

Progressive swelling of the tongue may cause life-threatening upper airway obstruction, requiring acute airway control by means of orotracheal or nasotracheal intubation [3,4] or, in some cases, acute cricothyrotomy. After securing the airway, spontaneous resolution of the swelling should be awaited, especially in cases of lingual swelling due to compromised vascular blood flow. Resolution of swelling may take as long as fourteen days [4].

We present a case of haematoma formation of the tongue after placement of dental implants. The swelling was successfully treated with medicinal leeches, also known as Hirudo therapy. This report comprises a brief overview of the possible mechanism behind Hirudo therapy. Although its role in resolution of the swelling remains unclear, Hirudo therapy is gaining acceptance as treatment of venous congestion and haematoma.

Case
A 61-year-old female attended the emergency department with an obstruction of the airway due to massive swelling of the tongue. She had visited the dentist earlier that day for dental implants. Shortly after placement of the implants, the patient developed swelling of the tongue.

Her medical history reported only hypertension, for which she received diuretics. Routine blood sampling showed neither signs of infection nor signs of any clotting disorder.

She was admitted to ICU because of a pending airway emergency due to a rapidly enlarging tongue [Figure 1]. Mechanical ventilation was started after successful intubation through direct laryngoscopy using ethomidate and succinylicholine chloride. Measures were in place to perform an acute cricothyrotomy should the attempt to intubate fail. The patient was sedated with diprivan and midazolam. While the patient was being mechanically ventilated, she also received cefotaxim and selective digestive tract decontamination.

Computed tomography of the head revealed an oedematous tongue and signs of bleeding in the right paramedian base of the tongue. The scan also showed a haematoma on the right lateral side of the tongue (Figure 5).

Over the next 4-5 days no reduction of the swollen tongue was seen. Because good results have been reported in the treatment of haematoma of the tongue with medicinal leeches, we decided to apply this leech therapy in our case of macroglossia. After a thorough search on the internet [8], these leeches were obtained from Zaandam, the Netherlands where they are harvested for commercial use. Leeches were applied to the tongue in an attempt to aid drainage of oedema and haematoma [Figure 2].

After three subsequent daily sessions of Hirudo therapy, the swelling subsided [Figure 3]. The sedation, which was accomplished using only diprivan nearing the end of the treatment, was stopped. The endotracheal tube was removed and the patient was discharged from our ICU. A few days later she was able to leave hospital.

Figure 1. Patient with macroglossia after orotracheal intubation

Keywords - Macroglossia, glossomegaly, haematoma of the tongue, hirudotherapy, leech therapy, medicinal leeches

CASE REPORT

Leech got your tongue? Haematoma of the tongue treated with medicinal leeches: a case report

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Abstract - We present a case of haematoma formation of the tongue after placement of dental implants. The swelling was successfully treated with medicinal leeches, also known as Hirudo therapy. This report comprises a brief overview of the possible mechanism behind Hirudo therapy. Although its role in resolution of the swelling remains unclear, Hirudo therapy is gaining acceptance as treatment of venous congestion and haematoma.

Keywords - Macroglossia, glossomegaly, haematoma of the tongue, hirudotherapy, leech therapy, medicinal leeches

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Discussion

Macroglossia is a rare condition and, in most cases, swelling of the tongue resolves spontaneously. Where macroglossia is due to haematoma or oedema formation several methods to aid reduction of swelling in macroglossia have been postulated.

Firstly, supportive therapy consists of elevation of the head to enhance postural drainage. Forceful manual reduction of the tongue, within the oral cavity, resulting in resolution of the swelling has been described. This procedure has its limitations [5,6]. Treatment with steroids has been described. However, no evidence supports the use of steroids particularly if lingual swelling is due to haematoma formation. Finally, some cases report successful and rapid resolution of macroglossia after initiating treatment with medicinal leeches [5,6].

The medical use of leeches is called Hirudo therapy. Leeches have been used in medicine since the time of the ancient Greeks, and their use reached its peak around the time of the Napoleonic Wars in the early 19th century. By the end of the 19th century the medicinal use of leeches had fallen into disfavour, mostly because its use did not fit into the newly emerging ideas of modern medicine [6,7]. Recently the leech has been rediscovered and gained acceptance as a means of treating venous insufficiency or venous congestion of pedicle or free flaps [5-7].

The effectiveness of the Hirudo therapy is thought to be caused by five types of chemicals present in the saliva of the leech. Hirudin, an antithrombotic substance, prevents clot formation and allows the slow continuous ooze of blood after detachment of the leech [Figure 4]. Hyaluronidase, a mucolytic enzyme, promotes the local spread of the saliva into the wound. Aeromonas hydrophilia, which symbiotically colonizes the gut of the leech, produces antibiotics to prevent spoiling and aids digestion of the ingested blood. The saliva of the leech also contains a vasodilator that maintains capillary flow, and a prostaglandin which reduces swelling [5-7]. Finally, the presence of an anaesthetic in the serum of the leech has been described [6].

Figure 2. Medicinal leeches applied to the tongue

Figure 4. Demonstrates the continuous oozing of blood after detachment of the leeches

Figure 3. Resolution of swelling of the tongue

Figure 5. Blush (arrow) at the base of the massively swollen tongue indicating arterial bleeding
The leech attaches only to a viable tissue sample, and therefore makes it a good marker of tissue vitality. Once attached, the leech extracts eight to nine times its body weight in blood which is approximately 20ml. After detachment, an additional amount of blood is lost via slow but continuous flow, caused by the substance Hirudin in the saliva of the leech [5-7].

Although leech therapy may aid the rapid resolution of macroglossia, it is not without potential complications. Leeches can be a vector of blood borne diseases, including HIV and hepatitis B. Therefore, leeches used in medical practice must be obtained from reputable commercial sources [5]. However, the most common complication of leech therapy is bacterial infection. Most commonly the endosymbiotic *aeromonas hydrophilia*, found within the leech itself, causes infection. This can be prevented with a second or third generation cephalosporin [7]. Other potential complications associated with Hirudo therapy include allergic reactions, anaemia due to excessive and persistent oozing of blood, migration of leeches into body cavities and psychological problems [5-7].

Leech therapy may aid in rapid resolution of macroglossia caused by haemorrhage, as described previously [6,7]. In our case, the leeches had an important role in reducing the swelling of the tongue. If leech therapy can be applied to other forms of macroglossia remains unknown.

**Conclusion**

Maintenance of a patent airway is a priority in life-threatening macroglossia. Secondly, the underlying disease process must be traced and directed therapy should be initiated. Macroglossia caused by haematoma or oedema formation can be successfully treated with medicinal leeches.

**References**

8. http://www.hirudotherapie.nl