What is gagging?

The terms gagging and retching are used synonymously to describe similar physiological occurrences. However, these terms have different meanings: retching is the initial process of expelling substances from the stomach, whereas gagging stops unwanted entry into the mouth or oropharynx.¹ Gagging is a normal reaction and protective reflex to stimulus such as dental instruments and clinician fingers within the oral cavity. Gagging can be absent, reduced or pronounced in the dental environment.¹ Clinicians can look for oral signs in patients to help anticipate gagging; these signs include palatal or circumoral muscle spasm, pharyngeal spasms, vomiting and excessive salivation.² Others signs which may indicate a patient is struggling with a gag reflex are panic attack, lacrimation, sweating, fainting and uncoordinated or reversed peristalsis.²

The gag reflex is most commonly triggered by five areas in the oral cavity which are considered very sensitive; these areas are the fauces, base of the tongue, palate, uvula and posterior pharyngeal wall.³ Occasionally gagging can be inadvertently caused by clinicians and iatrogenic factors such as over loaded impression trays and aspiration.² Dental staff may also recognise that patients sometimes start gagging with even auditory, olfactory or psychic stimuli.⁴

Almost half of dental patients report gagging at least once during dental visits and 7.5% report always gagging.⁵ Whilst these numbers may not seem significant, there can be detrimental

Exploring alternative methods of gag reflex control

Part 2: Acupuncture

By L. Cox¹ and J. Brindley²

This article is the second of two covering the management of patients with a sensitive gag reflex. Part 2 will focus on the technique of acupuncture – a traditional Chinese therapy.

A sensitive gag reflex can be difficult and problematic for registrants to manage as it can contribute to patient distress and anxiety and disrupt or prevent delivery of dental care, and therefore impact on future care. The aim of this article is to raise awareness of the contributing factors, severity and management of over active gag reflexes.

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consequences for patients with a pronounced gag reflex as well as for the dental team. Patients who suffer with gagging are more likely to be anxious of dental visits, fear dental pain and have negative opinions of dental professionals.⁵ Patients may anticipate gagging or become distressed at the thought of dental care, thus resulting in dental avoidance, pain and neglected dentition.²

How can we assess gagging?

Several researchers have developed ways in which to classify and assess gagging severity; the most prominently used indices are the Gagging Severity Index (GSI) and the Gagging Prevention Index (GPI), developed by Dickinson and Fiske.¹ Both of these scales use five descriptions to assess gagging, with one being a normal gag reflex and five being severe gagging that cannot be controlled. Although other systems and scales have been put into place the GSI and GPI have been used several times over and by several researchers demonstrating their replicability.

Why is this relevant?

Recent developments in dentistry and healthcare suggest that as a profession we are starting to accept a more holistic, patient centred and multidisciplinary approach to patient care and that the training for dentists and dental care professionals (DCPs) is now encompassing alternative therapies within training.⁶ The GDC's *Preparing for practice* document includes several learning outcomes which reinforce this:⁷

- Assess patients' levels of anxiety, experience and expectations in respect of dental care which reinforces the role of DCPs in assessing and managing patients
- Describe the properties of relevant medicines and therapeutic agents and discuss their application to patient management
- Describe the range of orthodox complementary and alternative therapies that may impact on patient management.

Anxiety and gagging have been found to be closely linked so to ensure patient comfort and compliance it is important to consider the ways in which registrants can help relieve anxiety and prevent disruption to the delivery of care.⁸ Historically gagging has been managed by desensitisation, relaxation, distraction and various anaesthetic and sedation techniques.⁹ Chinese medicine is not something traditionally used within dentistry, however, its use and value has been observed in relation to not only gagging but anxiety, xerostomia and relief of temporomandibular joint dysfunction and is therefore considered a complementary therapy.¹⁰

What is acupuncture?

It is believed that energy known as ch'i runs through 14 various pathways in the body and that 361 acupoints can rebalance Yin and Yang.¹¹ Yin and Yang are a balance which define health and are complementary representations of dynamic equilibrium: Yin provides qualities such as tranquillity and rest whereas Yang is responsible for activation and transformation.¹³ If applying this theory to heightened gag reflexes it is reasonable to presume that Yin is insufficient thus making the patient gag, yet stimulation to acupoints will restore balance, consequently relieving gagging. Therapeutic application to acupoints has evolved to encompass needling, pressure and massage amongst others.¹² Acupuncture can be defined as the insertion of a solid needle into specific body parts for therapy and health maintenance.¹³ Acupressure, alternatively, is a variation of acupuncture involving constant pressure on acupoints without puncture of the skin.³ The acupoints of interest for the relief of gag reflex are outlined in Table 1.

What is the evidence that these acupoints are effective?

Cheng jiang

One of the most commonly investigated points is cheng jiang, also known as CV-24, which is located in the labio-mental fold. A blinded, randomised, controlled study (RCT) on transesophageal echocardiography (TEE) patients has demonstrated the efficacy of this point. TEE reportedly causes nausea or gagging in approximately 60% of people. Participants underwent this procedure with either acupuncture, sham acupuncture or no acupuncture. Statistical analysis demonstrated significant differences, with the acupuncture group experiencing considerably less gagging than the sham group ($p = 0.037$), and even less so than the non-acupuncture group ($p = 0.013$).¹³ Similarly an audit of dental patients found that acupuncture to CV-24 enhanced tolerance to treatment with an average mean improvement of 53% ($p < 0.0001$) between GSI and GPI scores. Although no controls were implemented in this study, the methodology was robust and all participants underwent the same dental treatment of three stage maxillary impressions. The GSI and GPI were recorded prior to and after treatment respectively by statistical analysis which demonstrated success in 81% of participants.⁹

Furthermore, a similar method was applied in a controlled trial where the GSI scores were recorded for orthodontic patients. However, rather than puncture skin, laser stimulation of point CV-24 was implemented to ensure comfort. The test group exhibited an

improvement of 37.9% ($p = 0.002$) between GSI and GPI scores, with 86.6% of participants able to endure impressions.¹⁴ Both earlier and subsequent review papers discuss the success of CV-24 in reducing gagging, strengthening its value.¹⁵⁻¹⁸

Nei guan

Point P-6 is located on the wrist. Statistical analysis has demonstrated that acupuncture to this point significantly decreased gagging compared to sham acupuncture to the same point.^{11,19} In a randomised double-blind study acupuncture to P-6 improved visual analogue scores (VAS) by 48% ($p = 0.0015$) in addition to improving GSI and GPI scores by 32% ($p = 0.0016$).²⁰ Similar results have been established by other researchers, acupuncture to P-6 exhibited an average mean score of 0.92 ($p < 0.001$) compared to pseudo-acupuncture to the same point which showed a mean score of 1.37 ($p = 0.157$).¹¹ Acupuncture was therefore significantly more successful than sham or pseudo interventions.

Additionally, P-6 has been investigated by implementing test and control groups on P-6 itself and a dummy site located close to the acupoint.³ Substantial differences in acupuncture at P-6 compared to a dummy site were discovered. The clinicians evaluated acupuncture and found a statistical difference ($p = 0.047$) between P-6 and a dummy site. Patient evaluation also showed differences between the sites for acupuncture ($p = 0.009$).³

Er men

Ear acupuncture is a variation of acupuncture whereby most ailments can be remedied via the ear rather than acupoints on the body.²⁰ Er men or TB-21 is located just above the tragus of the ear and has been evidenced to be an effective acupoint.^{8,10}

A case study over 25 treatment episodes demonstrated that acupuncture to TB-21 relieved gagging and demonstrated high success rates on patients receiving a variety of dental treatments. Four of the subjects had GSI scores of IV and six of V; this however improved to GPI scores of I for eight and II for the remaining two subjects.¹⁰ Although these results are promising, the lack of control group and small participant number indicates that additional research on TB-21 incorporating statistical analysis would further reinforce these findings. A much larger randomised controlled trial of 100 participants offered encouraging results, participants receiving acupuncture to TB-21 showed a mean score of 0.65 ($p < 0.001$) after treatment compared to the control group who had a sham acupuncture mean score of 1.37 ($p = 0.157$).¹¹

Table 1 Glossary of Acupoints

Name	Point	Location and Diagram	Source
Cheng jiang	CV-24	Labio-mental fold	Rosted <i>et al.</i> , 2006 ⁹
Er men	TB-21	Above tragus anti-gagging point → external auditory meatus →	Fiske & Dickinson, 2001 ²¹
Hegu	LI-4	Dorsum of hand, between first and second metacarpal bones Hegu (LI-4)	Vachiramon & Wang, 2003 ¹⁸
Lao gong	P-8 / PC-8	Centre of ventrum of hand, between second and third metacarpal bones Lao Gong Per. 8	Acupuncture.com, 2015; http://bit.ly/2slOVw1
Nei guan / Nei kuan	P-6 / PC-6	Ventral surface of wrist, 2 inches above crease of wrist P-6 (Neikuan)	Lu <i>et al.</i> , 2000 ³

Using needles in ear sites has the advantage of lying out of the area of work and could be valuable in addition to other acupoints for very severe gagging.¹⁰ Acupuncture to point TB-21 is an effective and non-invasive technique to control gagging.^{16,21}

Synergy

The success of CV-24 and P-6 used together has been documented in the relief of gagging.^{14,22} Acupressure to P-6 has been investigated alongside laser stimulation to CV-24. Together these points achieved a difference of 58.9% ($p = 0.001$) between GSI and GPI scores with 93.3% of patients able to tolerate impressions. There was more success with CV-24 and P-6 combined compared to CV-24 alone evidencing a synergistic effect.¹⁴

Furthermore, successful acupuncture to points TB-21 and P-6 has been demonstrated on patients undergoing upper and lower impressions. Statistical analysis revealed a significant reduction ($p < 0.05$) in gagging scores for each impression procedure.²² This is indicative of a synergistic effect between different acupoints.

Visual comparison

The reviewed studies utilised diverse methodologies and analysed their findings differently. In order to quantify and illustrate the results and generate direct comparisons of the acupoints and interventions (acupuncture, laser, and acupressure), graphs were created depending on the type of analysis and scoring systems adopted. Figure 1 represents the most effective therapy independently as acupuncture to CV-24, although there is a clear success for combined therapies to CV-24 and P-6 simultaneously which suggests synergy.

Figure 2 demonstrates the differences in visual analogue scores and the efficacy of acupuncture to CV-24 compared to acupuncture to P-6 and shows evidence of a synergy between these acupoints when acupuncture is implemented.

Some of the studies have their own methods of measuring gagging which have not been repeated, thus preventing direct comparisons. These results have been collated independently to represent their efficacy; Figure 3 shows that acupuncture to TB-21 was more effective than to P-6, which had gag scores dropping significantly after acupuncture.

Acceptance and efficiency

Acupuncture is well tolerated by most patients¹³ although it is considered invasive by some, particularly children or needle phobic patients.¹⁴ The sensation of acupuncture is similar to being pricked with a toothpick which whilst uncomfortable may be favourable compared

Fig. 1 Differences in percentages between GSI and GPI scores

Fig. 2 Difference in VAS scores

to a hypersensitive gag reflex.²² Acupuncture has been described as quick (2-3 minutes of appointment time), non-invasive, safe and cost effective with a material price of £0.20 per patient per visit.²¹

How can we develop and access these skills?

In order to practise acupuncture it is essential to attend appropriate training and gain a formal qualification. The GDC state in their *Scope of practice* document that "The scope of your practice is a way of describing what you are trained and competent to do. It describes the areas in which you have the knowledge, skills and experience to practise safely and effectively in the best interests of patients."²³ This reiterates

the importance of being skilled and competent and the responsibility registrants have in acting in the best interests of their patients. On further communication with the GDC and several indemnity providers it was advised that there must be a clear prescription for the patient for acupuncture; it is also beneficial for at least one referring dentist to also be qualified in acupuncture and that registrants with additional skills should be competent and suitably indemnified. This is a great opportunity for team building, joint continuing professional development and practice building.

Information on courses for dental acupuncture as well as other additional complementary therapies can be found with local deaneries and on the following websites:

Fig. 3 Improvement in gag scores (Untitled three point gag index)

**'BY GAINING SKILLS AND QUALIFICATIONS IN
THIS AREA YOU CAN SUPPORT YOUR PATIENTS
TO IDENTIFY THEIR OWN TRIGGER POINTS'**

- <http://www.dental-acupuncture.org/courses-for-professionals/>
- <http://www.cmc dentalcpd.co.uk/Courses.html>
- <http://www.medical-acupuncture.co.uk/Default.aspx?tabid=313>.

By improving knowledge and gaining skills and qualifications in this area you can support your patients to identify their own trigger points, improve the patient experience by consciously avoiding areas that elicit gagging and provide treatment which can potentially reduce or even eliminate gagging and its associated issues. The use of alternative therapies within a healthcare setting is growing in popularity but is an area that should be further explored to promote its efficacy and use. Incorporating these techniques into personal daily practice can be an invaluable tool.

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