

## Main Article

Justin Yeo takes responsibility for the integrity of the content of the paper


**Cite this article:** Yeo JJY, Badrol SSS, Maan A, Chan J, Barraclough J, Jervis S. Cocaine use in sinonasal surgery: patients' perspective on its use and the need for pre-operative consent. *J Laryngol Otol* 2024;**138**:1036–1038. <https://doi.org/10.1017/S0022215124000963>

Received: 11 September 2023  
Revised: 24 March 2024  
Accepted: 29 March 2024  
First published online: 8 May 2024

**Keywords:**  
informed consent; anesthesia

**Corresponding author:**  
Justin Jui Yuan Yeo;  
Email: [justinjuianyueo@hotmail.com](mailto:justinjuianyueo@hotmail.com)

# Cocaine use in sinonasal surgery: patients' perspective on its use and the need for pre-operative consent

Justin Jui Yuan Yeo<sup>1</sup> , Sharifah Sara Syed Badrol<sup>1,2</sup>, Amandeep Maan<sup>1</sup>, Jacqueline Chan<sup>1,2</sup>, James Barraclough<sup>1</sup> and Suzanne Jervis<sup>2</sup>

<sup>1</sup>Department of ENT, Russell Halls Hospital, The Dudley Group NHS Foundation Trust, Dudley, UK and

<sup>2</sup>Department of ENT, Princess Royal Hospital, Shrewsbury and Telford Hospital NHS Trust, Telford, UK

## Abstract

**Objectives.** Intranasal cocaine is commonly used in endoscopic sinus surgery due to its vasoconstrictive and anaesthetic properties. This study aimed to understand patients' perspectives and whether patients should have to give their consent for its use.

**Methods.** Prospective data were collected over a three-month period in ENT departments in the out-patient setting of two district general hospitals. An anonymous questionnaire was distributed to all adult patients asking for their thoughts on cocaine use in sinonasal surgery and the need for peri-operative discussion.

**Results.** In total, 123 patient questionnaires were analysed. It was found that 9.8 per cent of patients knew of cocaine use in sinonasal surgery, 73.2 per cent of patients stated they would like a pre-operative discussion on cocaine use before surgery and 83.1 per cent of patients raised concerns over cocaine's illicit status, mainly its effect on work and driving. Only 34 per cent of patients said that they would prefer an alternative to cocaine.

**Conclusion.** This study found that patients want to know if and when cocaine is being used intra-operatively without necessarily objecting to it.

## Introduction

Intranasal cocaine use has traditionally been a popular choice for otolaryngologists carrying out functional endoscopic sinus surgery (FESS) because of its dual effect of vasoconstriction and anaesthesia. However, cocaine's drug side-effect profile is significant, with the potential to cause a spectrum of pathology, including inflammation of nasal mucosa, crusting and subsequent destruction of nasal, palatal and pharyngeal tissues.<sup>1</sup> Systemic side effects include myocardial ischaemia, arrhythmias, hypertension, loss of thermal regulation, seizures and ultimately death.<sup>2</sup>

In the last century, cocaine became more popular for widespread abuse as a result of its side effect of excited delirium, leading to the negative social stigma being associated with it.<sup>3,4</sup> Moreover, alternatives to cocaine without its abuse potential have been developed, with some showing no difference in the quality of vasoconstriction obtained compared with cocaine.<sup>5,6</sup> Although there has been a shift in decongestant choice for clinicians to avoid cocaine, its use has not completely fallen out of favour.<sup>7</sup> Because intranasal cocaine is used most commonly for patients undergoing FESS under general anaesthesia, its use during the procedure is rarely explained to them, which may be argued as being 'uninformed' consent.

The aim of this study was to understand patients' perspectives on the use of cocaine, whether we should consent patients to its use and, ultimately, to evaluate whether cocaine should remain in an ENT surgeon's repertoire.

## Materials and methods

A prospective study was performed over a three-month period in the ENT departments based in two separate district general hospitals: the Princess Royal Hospital, Telford and Russells Hall Hospital, Dudley, both in the UK. A questionnaire (Supporting Information 1) was designed and distributed to all adult patients presenting to the ENT out-patient department for a clinician appointment in that period. There were no exclusion criteria apart from age and completion of the questionnaire was anonymous and voluntary. The questionnaire consisted of 13 questions and requested information on age, sex, ethnicity, co-morbidities, previous drug abuse. It also included questions exploring patients' thoughts on cocaine use in sinonasal surgery and the need for peri-operative discussion.

## Results

A total of 123 patient questionnaires were completed by the two sites and included in the analysis of this study, 102 from Russell's Hall Hospital and 21 from Princess Royal Hospital.

Total participants by age

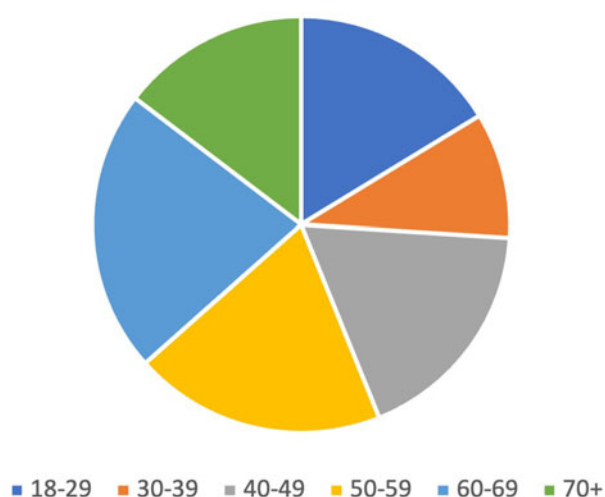


Figure 1. Distribution of patient participants by age.

The proportions of male to female participants were 32.5 and 66.7 per cent for Russell's Hall Hospital and Princess Royal Hospital, respectively, and one participant chose not to disclose their gender. There was rather equal distribution of age amongst the patient group, as illustrated in Figure 1, but 87 per cent of the participants were of White or Caucasian ethnicity, with the remaining participants from Asian and Afro-Caribbean backgrounds (7.3 and 5.7 per cent, respectively).

The proportion of patients who knew of cocaine use in sinus surgery was 9.8 per cent. The overall rate of patients ( $n = 90$ ) who would prefer to have a peri-operative discussion on cocaine use in surgery was 73.2 per cent. In addition, 81.3 per cent of these patients would like this to happen pre-operatively in the out-patient setting. Ten patients reported previous history of illicit drug use and 70 per cent of them would also prefer the use of cocaine to be discussed with them peri-operatively.

Figure 2 shows the distribution of the concerns raised by the patients on medical cocaine use ( $n = 77$ ), with most

Concerns regarding Cocaine

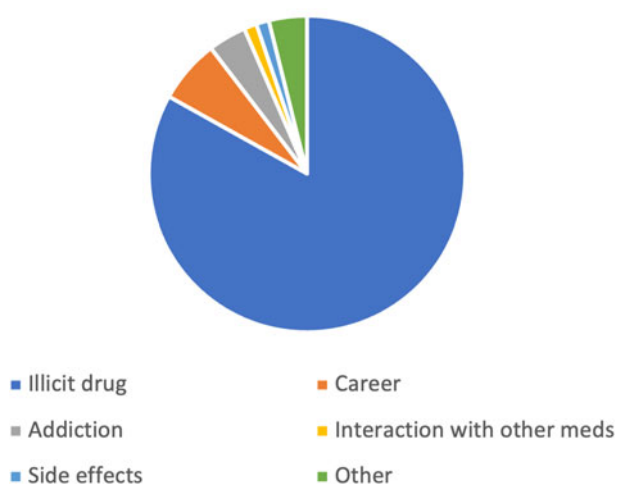


Figure 2. Concerns raised by patients regarding medical cocaine use and issues they would like clarifying/addressing peri-operatively.

being worried about the illicit status of the drug (83.1 per cent,  $n = 64$ ). The range of issues that patients raised in this questionnaire as their concerns and points for clarification include the impact of cocaine use on drug testing at work and driving, the possibility of use leading to addiction, potential side effects and interactions with other regular medications. Just over a third of patients (34 per cent) also mentioned that they would prefer an alternative agent to be used should there be an appropriate option instead of cocaine. Furthermore, 10 per cent of patients also reported that they would be unhappy should cocaine be used without their prior knowledge.

## Discussion

In the UK, the General Medical Council sets out guidance for clinicians, with seven principles for decision making and consent that involve helping patients make informed decisions by listening, exchanging meaningful dialogue and supporting them in making their decision.<sup>8</sup> Our results suggest that the majority of patients would like to be informed if cocaine was administered to them. Clinicians should consider making discussions regarding medical cocaine use routine in their daily practice to help support patients in making an informed choice. This is further strengthened by the availability of alternative topical vasoconstrictors that could be used to replace cocaine's effect, including adrenaline, phenylephrine and oxymetazoline. These agents can be used in combination with local anaesthetic agents such as lidocaine, levobupivacaine or tetracaine, thus providing the dual effect that has made medical cocaine's use popular.<sup>9</sup>

In our centre, cocaine is most commonly used as part of Moffett's solution, which is made from a mixture of 1–2 ml of 5 per cent cocaine, 1 ml of 1:1000 adrenaline and 2 ml of sodium bicarbonate (based on surgeon's preference) made up to 10 ml with 0.9 per cent sodium chloride. Moffett's solution is best known for its profound vasoconstrictive effect, originally used by Major Arthur James Moffett, who published his work back in 1942. However, the controversy for its use lies in the theoretical argument that one drug in the mixture increases the toxicity of the other.<sup>10</sup>

There is an argument that the issue regarding informed choice of using medical cocaine lies more with the social stigma and its unlawfulness. The biggest concern identified from our study was the illicit status of the drug ( $n = 64$ ), much more than its side effects ( $n = 5$ ). A possible explanation for this could be the information asymmetry that may have arisen from the 'routine' use of medical cocaine. The lack of insight regarding the use of cocaine may be a cause for dissatisfaction, and this can be addressed by a simple conversation between clinician and patient. Unfortunately, our data do not capture the reasoning as to why patients are concerned about cocaine's illicit status despite its legitimate medical usage. Perhaps there is a concern that cocaine's medical necessity is a contributing factor to its illegal distribution.

Interestingly, there was also a small number of patients who raised concerns regarding the detectability of cocaine in the bloodstream post surgery and how this could affect drug testing for work or driving reasons. A small study in Australia<sup>11</sup> investigating the bioavailability of intranasally administered cocaine post endoscopic sinus surgery found that the peak plasma concentration of cocaine occurs at 2–6 hours post surgery (range 13–31  $\mu\text{g/l}$ ) and it was undetectable at 12 hours. However, the cocaine degradation product benzoylecgonine

was still detectable at 12 hours (mean 51.7 µg/l). As the legal cut-offs for driving in the UK are 10 µg/l for cocaine and 50 µg/l for benzoylecgonine,<sup>12</sup> this is an important point to discuss peri-operatively, in addition to providing patients with written information on discharge to support any need for justification of use at work or when driving.

- Intranasal cocaine is a popular choice for otolaryngologists carrying out sinonasal surgery because of its dual effect of vasoconstriction and anaesthesia
- The side-effect profile of cocaine is significant
- Cocaine is illegal in most countries because of its abuse potential as a result of the side effect of excited delirium
- Patients are largely unaware that cocaine is used in sinonasal surgery
- The majority of patients would prefer to be told about the use of cocaine peri-operatively and would like a discussion about it, mostly in the pre-operative out-patient setting
- The biggest concern that patients have is the illicit nature of the drug and the impact this may have on drug testing at work or when driving

One of the limitations of our study was the uneven demographics of the study population. The majority of our patients were Caucasian females. Another limitation was that patients' perspectives were only captured in the out-patient setting. These two factors are important in understanding patients' healthcare-related expectations. A person's immediate health status (a spectrum of how ill a patient is), cultural background, economic status and social psychology all play an important role in setting their healthcare-related expectations. Perhaps the introduction of a questionnaire has introduced an active expectation to patients that was previously unsought. Lakin and Kane discussed how an analytical approach can allow practitioners to consider how people's social location can affect their expectations of healthcare.<sup>13</sup>

As an invalidated questionnaire was used, this study was prone to responder bias. Another important factor is that patients who filled in these questionnaires were not attending a rhinology clinic specifically. Their presenting complaint could have been due to pathology not requiring any nasal intervention, which would increase the risk of the study being exposed to non-response bias.

On completion of the study, there was a clear disparity in the number of participants from the patient group in one setting (Princess Royal Hospital) compared with that from the Dudley setting (21 patients *vs* 102 patients). Anecdotal reports from out-patient staff suggested that there was reluctance in patients completing the questionnaire and as to not coerce patients into completing the questionnaire, we did not explore the reasonings behind this observed hesitancy. This may be an avenue to explore in future to understand further the social

and geographical factors impacting patients' perception of the medical use of cocaine.

## Conclusion

This study demonstrates that patients do want to know if and when cocaine is being considered for use intra-operatively without necessarily objecting to it. Modernising the consent process with the inclusion of pre-operative discussion of its use would provide the opportunity to address any misconceptions and stigma attached to the substance, help improve the surgeon–patient relationship and potentially lead to fewer future medico-legal implications.

**Supplementary material.** The supplementary material for this article can be found at <https://doi.org/10.1017/S0022215124000963>.

**Competing interests.** None declared

## References

- 1 Wang SH, Wang HW, Wang JY. Effects of cocaine on human nasal mucosa. *Eur Arch Otorhinolaryngol* 1993;**250**:245–8
- 2 Campbell BG. Cocaine abuse with hyperthermia, seizures and fatal complications. *Med J Aust* 1988;**149**:387–9
- 3 Karch SB. Cocaine: history, use, abuse. *J R Soc Med* 1999;**92**:393–7
- 4 Bard ND, Antunes B, Roos CM, Olschowsky A, de Pinho LB. Stigma and prejudice: the experience of crack users. *Rev Lat Am Enfermagem* 2016;**24**: e2680
- 5 Alhaddad ST, Khanna AK, Mascha EJ, Abdelmalak BB. Phenylephrine as an alternative to cocaine for nasal vasoconstriction before nasal surgery: a randomised trial. *Indian J Anaesth* 2013;**57**:163–9
- 6 Kasemsuwan L, Griffiths MV. Lignocaine with adrenaline: is it as effective as cocaine in rhinological practice? *Clin Otolaryngol Allied Sci* 1996;**21**:127–9
- 7 Long H, Greller H, Mercurio-Zappala M, Nelson LS, Hoffman RS. Medicinal use of cocaine: a shifting paradigm over 25 years. *Laryngoscope* 2004;**114**:1625–9
- 8 General Medical Council. Decision making and consent. In: <https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/decision-making-and-consent> [31 July 2023]
- 9 Murdoch I, Surda P, Nguyen-Lu N. Anaesthesia for rhinological surgery. *BJA Educ* 2021;**21**:225–31
- 10 Benjamin E, Wong DKK, Choa D. Moffett's' solution: a review of the evidence and scientific basis for the topical preparation of the nose. *Clin Otolaryngol Allied Sci* 2005;**29**:582–7
- 11 Page DE, Rimmer J, Keane M, Manikappa S, Butzbach D, Giddings C. Is atomised intranasal cocaine systemically absorbed during endoscopic sinus surgery? *Rhinology* 2019;**57**:200–5
- 12 Department of Transport. Drink and drug driving law. In: <https://www.gov.uk/government/collections/drug-driving> [31 August 2023]
- 13 Lakin K, Kane S. Peoples' expectations of healthcare: a conceptual review and proposed analytical framework. *Soc Sci Med* 2022;**292**:114636