Received: 21 March 2021 | Accepted: 2 April 2021

DOI: 10.1002/ccr3.4197

CASE REPORT

Clinical Case Reports Open Access WILEY

# COVID-19 isolation drape for sialendoscopy-assisted transfacial approach to parotid gland

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**Funding information**
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors

**Abstract**

Surgical procedures requiring close contact with saliva, such as salivary gland surgery, may determine the risk of spreading the SARS-CoV-2 infection. The use of PPE and isolation settings are mandatory to protect health workers.

**KEYWORDS**

COVID-19, parotid gland, PPE, SARS-CoV-2, sialendoscopy-assisted, transfacial approach

## 1 | INTRODUCTION

The COVID-19 pandemic has raised concern of viral transmission during otolaryngological procedures by means of droplets/saliva. The use of PPE and isolation settings are mandatory during surgery. This paper describes the development of the STAPID setting to reduce salivary spread during a sialendoscopy-assisted transfacial removal of a parotid stone.

Severe-Acute-Respiratory-Syndrome Coronavirus 2 (SARS-CoV-2), a novel highly-transmissible respiratory coronavirus, was responsible of coronavirus disease 2019 (COVID-19) since December 2019. On March 11, 2020 the World Health Organization (WHO) declared COVID-19 a worldwide pandemic. Person-to-person transmission occurs primarily through droplets spread by coughing or sneezing from an infected individual or via direct contact. Recently, the virus has also been detected in saliva samples, thus making saliva a potential transmission route for COVID-19; in fact, To et al tested SARS-CoV-2 in saliva samples from 12 patients: all but one were positive with a decreasing viral load trend.[1] A SARS-Cov-2 tropism for the epithelial salivary ducts cells through angiotensin-converting enzyme 2 (ACE2) receptors was described in rhesus macaques.[1] This suggests the possibility of SARS-CoV-2 salivary infection, although its detection in saliva may be partially related to the contribution, in this *milieu*, of secretions from the nasopharynx or the lower airways. It has been recently hypothesized that the infection of SARS-CoV-2 could favor acute sialadenitis and,

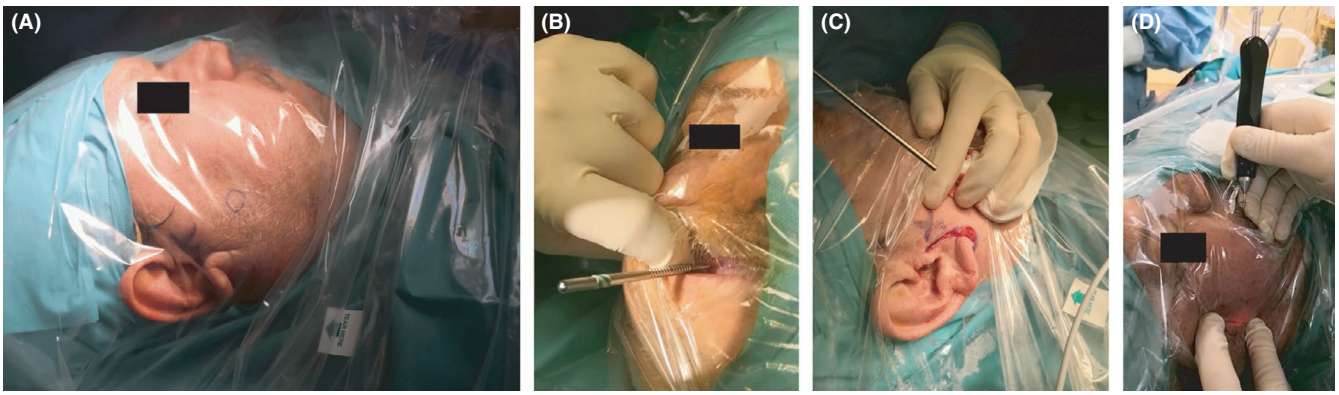


**FIGURE 1** (A) positioning of a transparent microscope cover over and around patient's head; two fenestrations were created in the plastic drape for either an endoral and transfacial approach, respectively, over patient's mouth (B) and parotid area (C); (D) the high-powered light at the tip of the sialendoscope allowed to confirm the exact location of the stone previously marked on the facial skin

after the acute phase, chronic sialadenitis as a consequence of fibrosis repairment.[2] It is not a casualty that we recently described a SARS-CoV-2 positive patient whose first clinical manifestation was an acute non-suppurative parotitis.[3] During this pandemic, patients continue to come with urgent head and neck pathologies requiring surgery. A general consensus exists on high risks of contagion by SARS-CoV-2 during otolaryngological procedures that may determine an aerosolization with nosocomial amplification of the infection. Moreover, procedures requiring close contact with saliva, such as surgical procedures for salivary gland disease with a transoral and/or combined oral and external approach,[4] may determine the risk of spreading the infection by means of salivary contamination. For those reasons, the use of particular Personal Protective Equipment (PPE) and isolation settings are mandatory to protect health-workers, especially otolaryngologists. We here describe our experience developing the STAPID (Sialendoscopy-assisted Transfacial Approach to Parotid gland and duct Isolation Drape setting) to reduce salivary spread in and around the surgical field during a sialendoscopy-assisted transfacial removal of a parotid stone causing recurrent episodes of gland abscess.

## 2 | CASE REPORT

A 59-year-old male patient was referred to the Department of Otolaryngology and Head and Neck Surgery, Fondazione IRCCS Ca' Granda, Ospedale Maggiore Policlinico of Milan, Italy due to a painful right facial swelling caused by a recurrent parotid abscess treated by means of multiple percutaneous drainages elsewhere. An ultrasonography (US) assessment of the region using a 7.5 MHz Hitachi H21 scanner (Hitachi High-Technology Corporation Ltd) identified a 7-mm parenchymal stone in the right parotid gland, and a Cone Beam Computed Tomography scan (CBCT – GE LightSpeed 64 Slice CT scanner, GE Medical Systems) and a magnetic resonance imaging (MRI – Philips Gyroscan Intera, Eindhoven, The Netherlands) were used to confirm the location and size of the stone; imaging results prompted us to adopt a sialendoscopy-assisted transfacial removal of the stone. The patient was selected to priority surgery by our internal interdisciplinary medical board because of long-lasting infectious disease. The patient was asymptomatic for COVID-19 and 48 hours before surgery underwent two consecutive nasopharyngeal swabs to detect RNA of SARS-COV-2, both negative.

The procedure was done under general anesthesia and an orotracheal tube was used. After disinfection with a povidone iodine solution, placement of sterile dressing over and around the head, leaving the mouth and the right side of the face and neck uncovered, the possible location of the stone was marked on the facial skin. Patient's head and chest were enclosed in a chamber created with a transparent microscope cover (Galstar LTD, London, UK) (Figure 1A). Non-penetrating towel clamps were used to secure the plastic cover to the bed to keep the drape taught over the surgical field. Two fenestrations were created in the plastic drape to allow passage of instruments for a transoral and external approach, respectively, over patient's mouth and parotid area (Figure 1B,C). These materials were readily available at our institution and are currently used by most otolaryngological surgeons performing ear and laryngeal surgery. After dilatation with lacrimal dilators (Karl Storz, Tuttlingen, Germany) of the opening orifice of Stensen's duct performed through the opening in the plastic cover over the patient's mouth, a sialendoscopic exploration of the duct system of the affected parotid gland by means of a semirigid sialendoscope (0.8 mm, Nahlieli sialoendoscope, Karl Storz Co., GmbH) was done. Once the surgeon could visualize the stone in a lower secondary parenchymal branch of the duct system, the high-powered light at the tip of the endoscope allowed to confirm the location of the stone as marked on the facial skin (Figure 1D). Continuous aspiration of oral

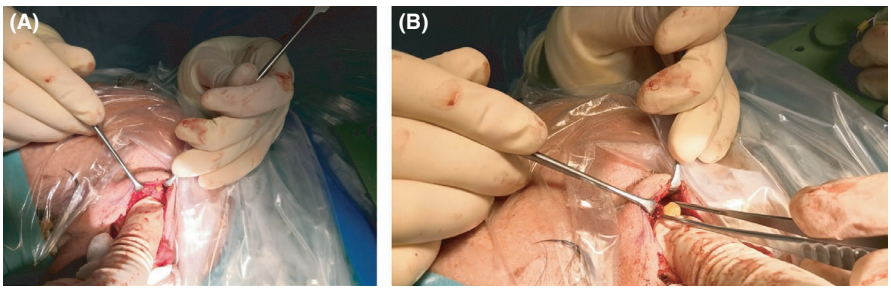


**FIGURE 2** (A) after exposition of the parotid gland and incision of a secondary parenchymal branch of the duct system, the stone is visible prior its removal; (B) stone removal

secretions through the small hole of the plastic transparent drape was done during the whole procedure to minimize aerosol dispersal. A skin flap was subsequently raised and the dissection continued involving the parotid fascia in order to expose the parotid gland in front of the stone and the proximal tract of Stensen's duct, through the second opening in the plastic cover. During the blunt dissection, the buccal branch of the facial nerve close to the duct surgery was identified. A neurostimulator (Neuro-Pulse®, Bovie Medical Corporation) was used to check the functioning of the buccal branch and other possible branches of the VII cranial nerve met during dissection. The light at the tip of the endoscope allowed the exact position of the stone to be located, and a secondary parenchymal branch was incised over the stone (Figure 2A) and parallel to its direction using a size 11 scalpel; after gentle dissection using dedicated instruments, the stone was grasped with forceps, and then removed (Figure 2B). The duct was then irrigated with saline and an endoscopic search was done for any residual stones or debris. A net of hemostatic patch (Tabotam, Ethicon Sarl, Neuchatel, Switzerland) was positioned over the incisional area to cover parotid tissue as previously described[5] and preauricular incision was sutured. A compressive dressing and 48 hours without eating and drinking was prescribed; peri-operative antibiotic prophylaxis and one week of post-operative antibiotic therapy with amoxicillin plus clavulanic acid was given.

A 7-mm nonpalpable salivary stone embedded into the secondary parenchymal branch of the right Stensen duct was successfully removed using a sialendoscopy-assisted transfacial approach performed through STAPID; the presence of the drape did not interfere with the surgical procedure as well as the senior salivary surgeon (PC) did not find any particular discomfort compared to traditional surgery.[5] The surgical time was 85 minutes. The stone was completely removed, no residual debris remained in the duct system and no further surgery was required. No major or minor complication (ie facial nerve palsy, sialocele, salivary fistula, sialadenitis) occurred during or after the procedure; post-operative mild gland swelling resolved in a few days with the application of a pressure dressing. The patient was satisfied with its facial scar.

## 3 | DISCUSSION

Otolaryngologists and head and neck surgeons are at high risk of contagion by SARS-CoV-2 virus and therefore protective measures and procedures are essential in order to try to maintain safety of healthcare workers during surgery. It has been declared that all the interventions that have the potential to aerosolize aerodigestive secretions should be avoided or used only when mandatory.[4] Long-lasting infections of salivary glands (in particular a history of recurrent salivary abscess) due to obstructive and inflammatory disease are urgent and priority clinical condition needing a therapeutic surgical strategy after an interdisciplinary case-by-case discussion as is currently done for cancer patients. A diagnostic work-up based on initial prescreening with telemedicine to exclude non-neoplastic salivary disease, further imaging and COVID-19 screening to follow and prepare patients with suspected salivary gland neoplasms has been recently proposed.[5] On the other hand, the fact that salivary glands are target tissue of SARS-CoV-2 due to the presence of ACE2 receptors and that acute parotitis may be the first clinical manifestation of COVID-19 draws attention on how a surgical approach to salivary glands should be done in particular if a sialendoscopic procedure or a sialendoscopy-assisted surgical approach is planned.[4] We adopted, for the first time, an isolation drape setting to undergo a sialendoscopy-assisted transfacial removal of a parenchymal parotid stone (STAPID) to reduce the risk of contamination during oral sialendoscopy and to separate external surgery from endoral access. The procedure was successful and the presence of isolation drape setting did not interfere with surgery and timing of surgery; moreover, this setting is simple, cost-effective, and reproducible. As long as COVID-19 pandemic takes its own course and safety recommendations for evaluation and surgery of the head and neck are developing all efforts have to be done to minimize potential COVID-19 exposure. In this regard, the application of this transparent isolation plastic drape to cover the whole face and the small hole in the mouth to favor the introduction of the sialendoscope into the salivary duct system is part, together with the use of specific Personal Protective Equipment (PPE), of the new strategy to reduce the aerosolization during combined transoral and transcervical salivary surgery.

## CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

## AUTHOR CONTRIBUTIONS

Michele Gaffuri and Pasquale Capaccio wrote the clinical report and treated the patient. Michele Gaffuri, Sara Torretta, Lorenzo Pignataro and Pasquale Capaccio collected the medical data and critically revised the manuscript. Antonio Libonati and Jacopo Ettori were involved in drafting the manuscript and helped in acquisition of data. Michele Gaffuri and Pasquale Capaccio conceived the publication and revised the manuscript. All authors listed gave final approval of the version to be published and agreed to be accountable for all aspects of the work.

## ETHICAL APPROVAL

Written informed consent was obtained from the patient at the time of his admission. The described procedure was in accordance with the ethical standards of the institutional and national research committee, and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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**How to cite this article:** Gaffuri M, Libonati A, Ettori J, Torretta S, Pignataro L, Capaccio P. COVID-19 isolation drape for sialendoscopy-assisted transfacial approach to parotid gland. *Clin Case Rep*. 2021;9:e04197. https://doi.org/10.1002/ccr3.4197