

Ricardo Cachinho^{*1}, Mário Rito Pereira¹, Francesc Abella Sans², José João Baltazar Mendes¹

¹ - Egas Moniz Center for Interdisciplinary Research (CiiEM); Egas Moniz School of Health & Science, Campus Universitário, Quinta da Granja, 2829-511 Caparica, Almada, Portugal
² - Department of Endodontics, School of Dentistry, Universitat Internacional de Catalunya, Barcelona, Spain

INTRODUCTION

Pulp canal calcification (PCC) is a common finding in permanent teeth characterized by hard tissue deposition within the root canal¹. It is associated with dental trauma, orthodontic treatment, dental caries, and aging². When PCC is linked to periapical pathology, this represents significant challenges, especially during root canal access³. Endodontic microscopy and ultrasonic tips have improved outcomes, with a success rate approximately 74%. Nevertheless, iatrogenic complications remain frequent⁴. Despite its clinical relevance, few studies have explored clinicians' knowledge and perceptions.

OBJECTIVES

This study aimed to evaluate the experience of Portuguese dentists, particularly those with a predominant endodontic practice in managing calcified canals.

METHODOLOGY

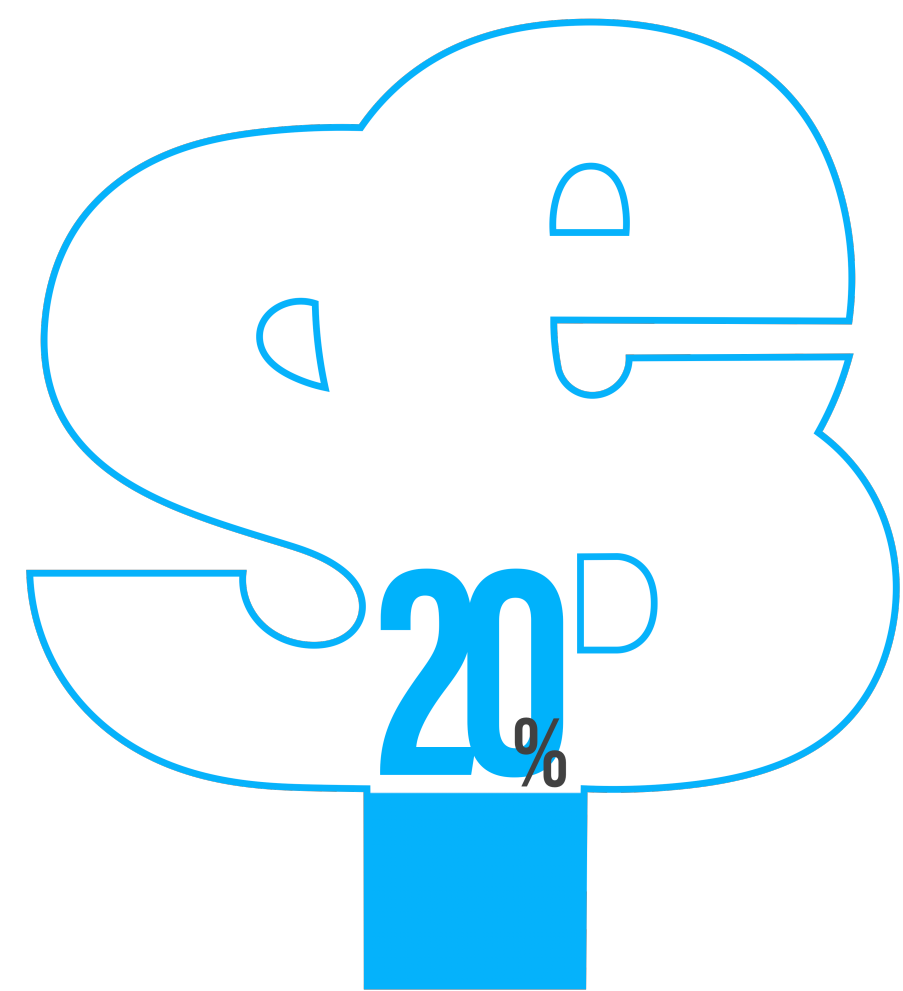
A 19-question survey focusing on the diagnosis and management of PCC was distributed via Google Forms to members of the Sociedade Portuguesa de Endodontologia (SPE). Questions covered demographic and professional profiles, clinical approaches, and perspectives on emerging technologies and materials. Inclusion criteria included active SPE membership and clinical practice in dentistry.

RESULTS

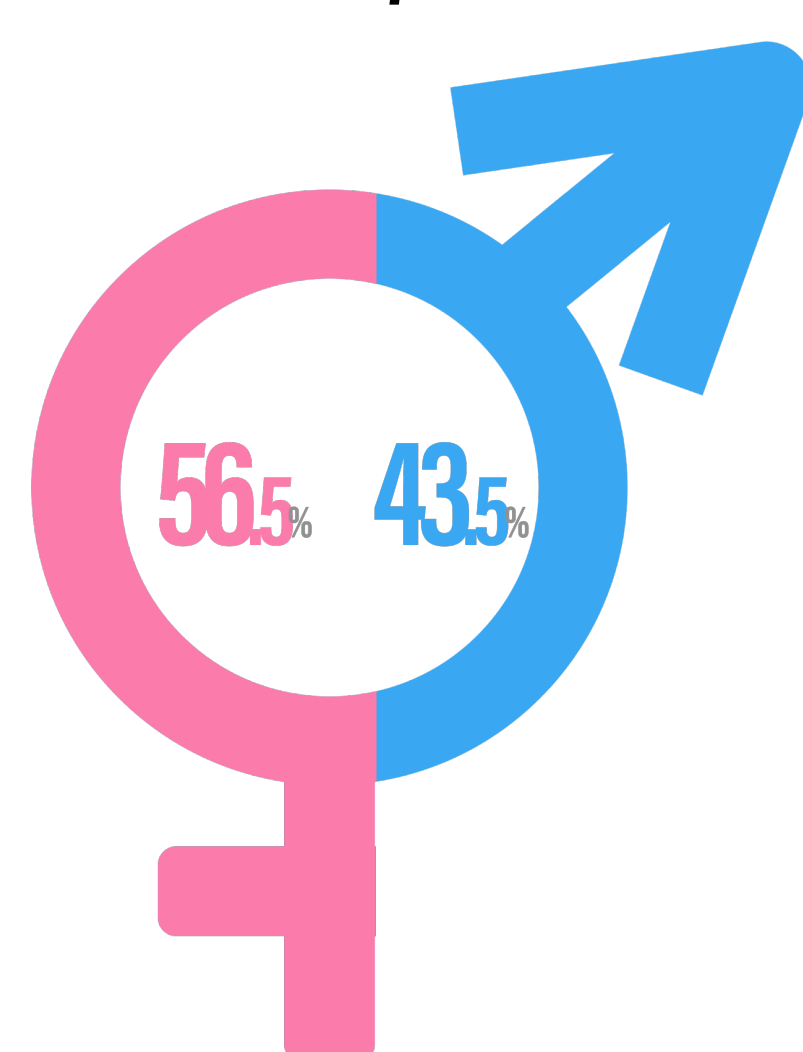
62 answers were received from 311 SPE associates, representing a response rate of around 20%.

Among the 62 respondents, 56.5% were female. Almost half (48%) had over 10 years of practice; 62.9% held a post-graduation in Endodontics. Most worked in Portugal (88.5%) and 88.7% had attended training on pulp calcification. In clinical practice, 67.7% reported 0-25% of PCC cases; 19.4% referred these cases, mainly due to lack of materials (55.6%). Trauma was the most cited aetiology (88.7%), followed by restorative procedures (46.8%). Periapical radiography (69.4%) and CBCT (58.1%) were the main diagnostic tools. Diagnosis was considered difficult (46.8%) or moderate (40.3%). Non-surgical endodontics was preferred (87.1%); access was considered the most difficult step (56.5%). PCC was mostly frequently found in incisors (58.1%), followed by molars (35.5%). Magnification was used by 92% (71% microscope, 21% loupes). Ultrasonic tips (95.2%) and burs (50%) were the most common tools. Regarding future perspectives, 93.5% supported developing materials guided by CBCT; 83.9% believe technologies like AI and 3D printing could improve outcomes.

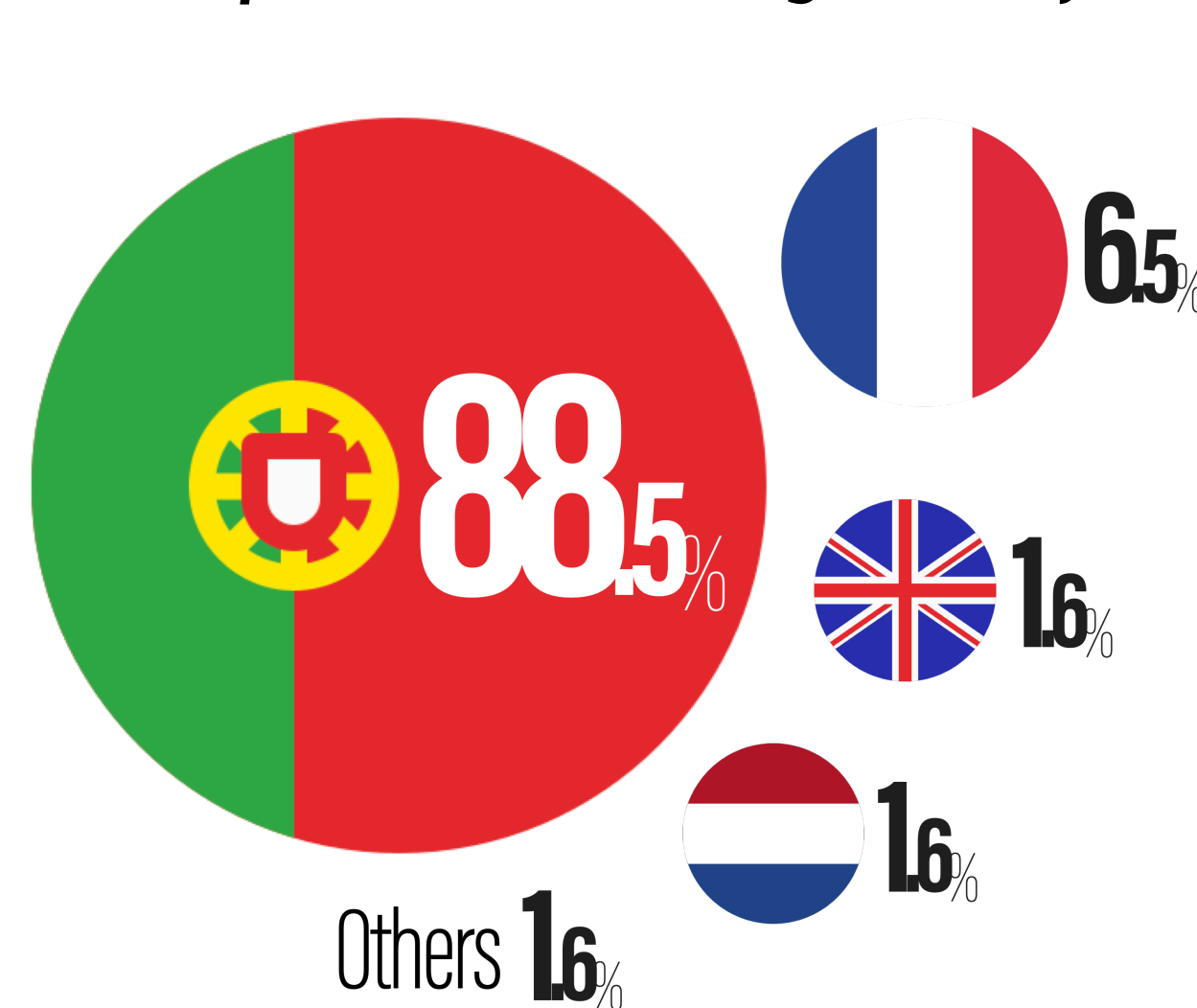
SPE associates response rate



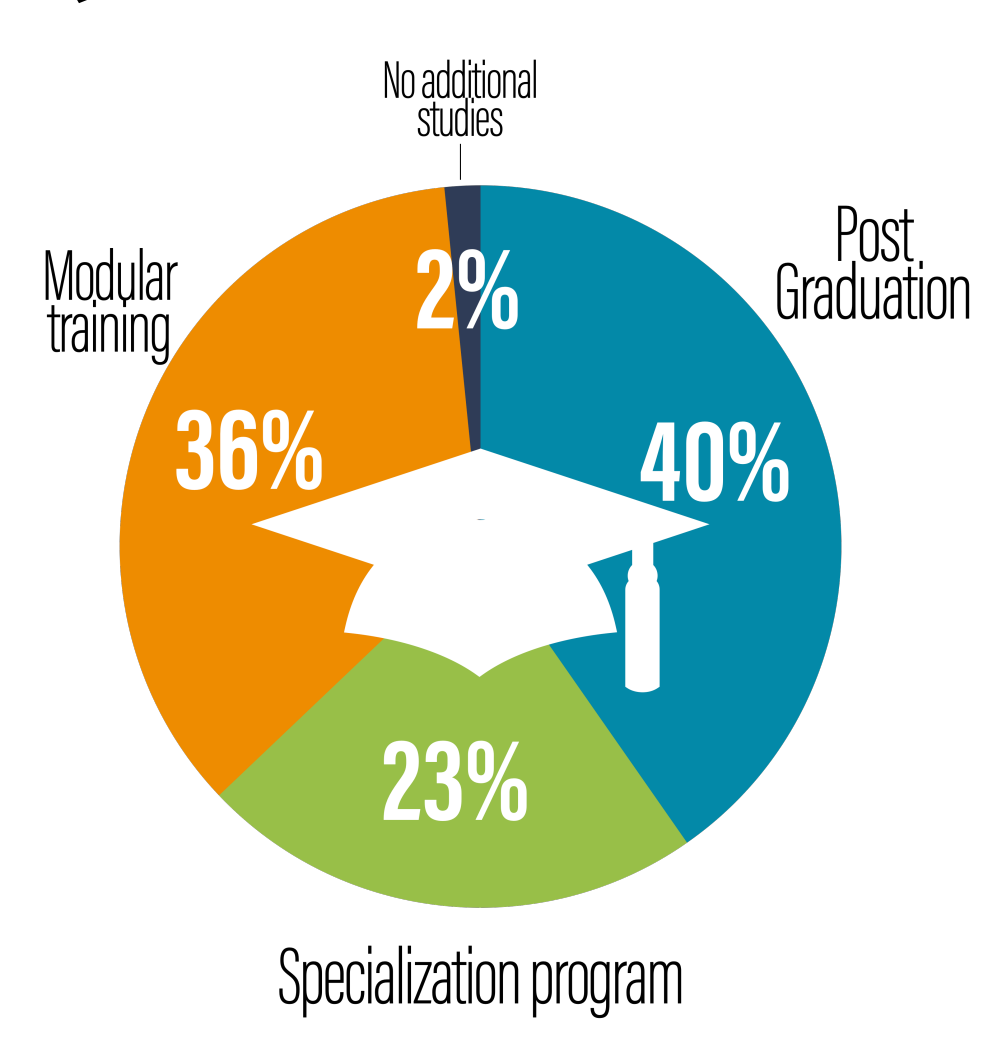
Genre response rate



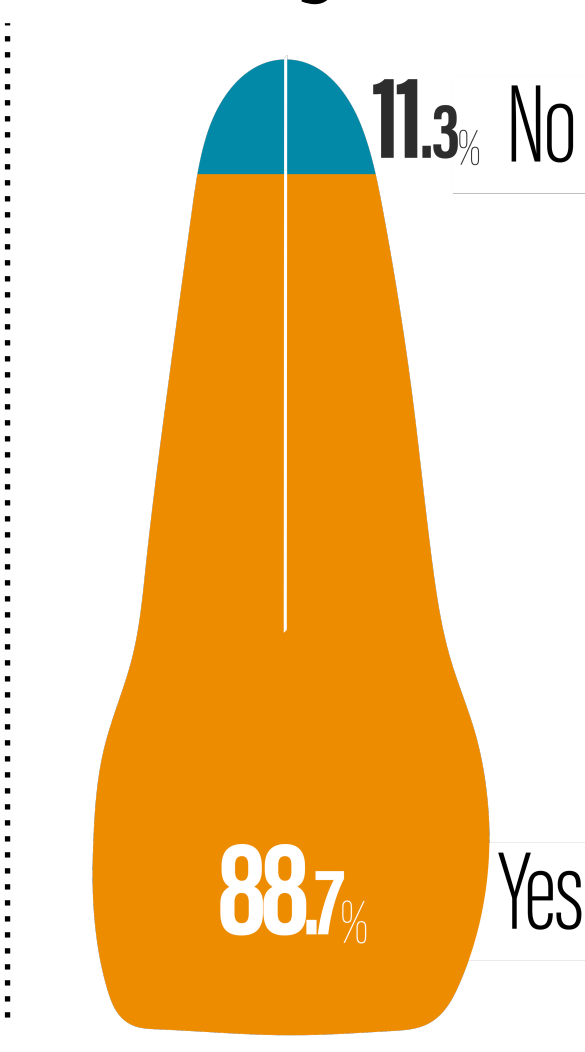
Respondents working country



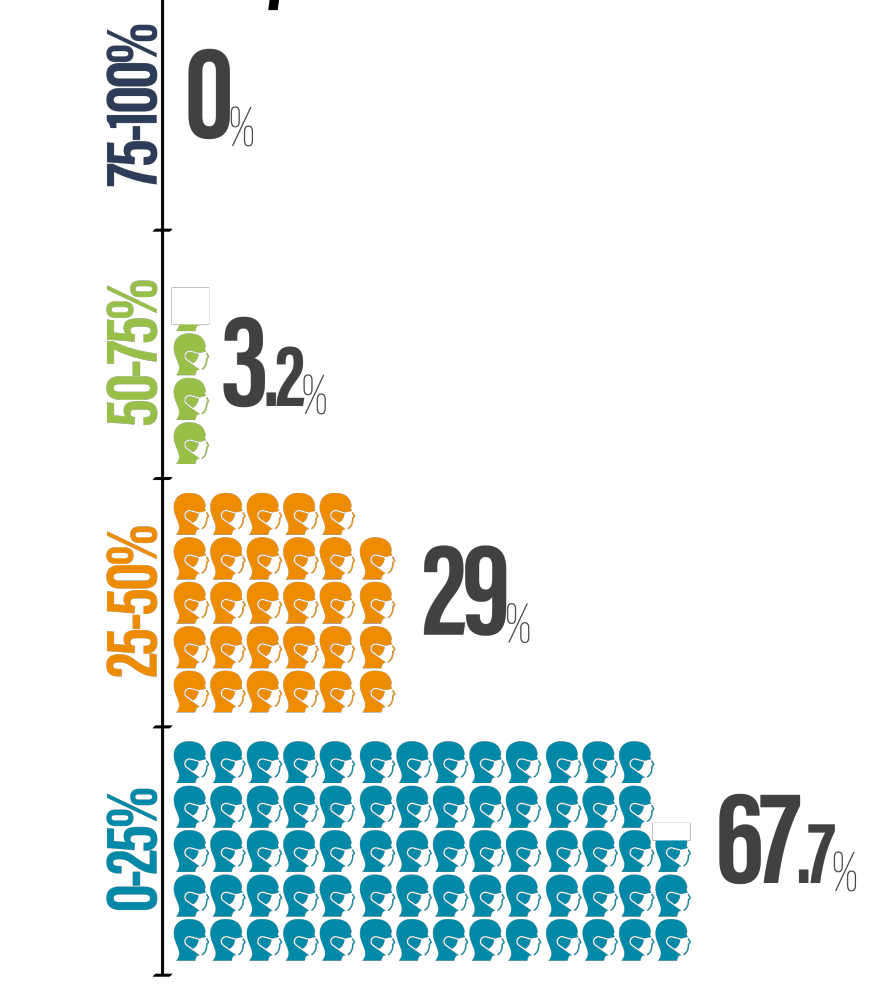
Qualification in endodontics



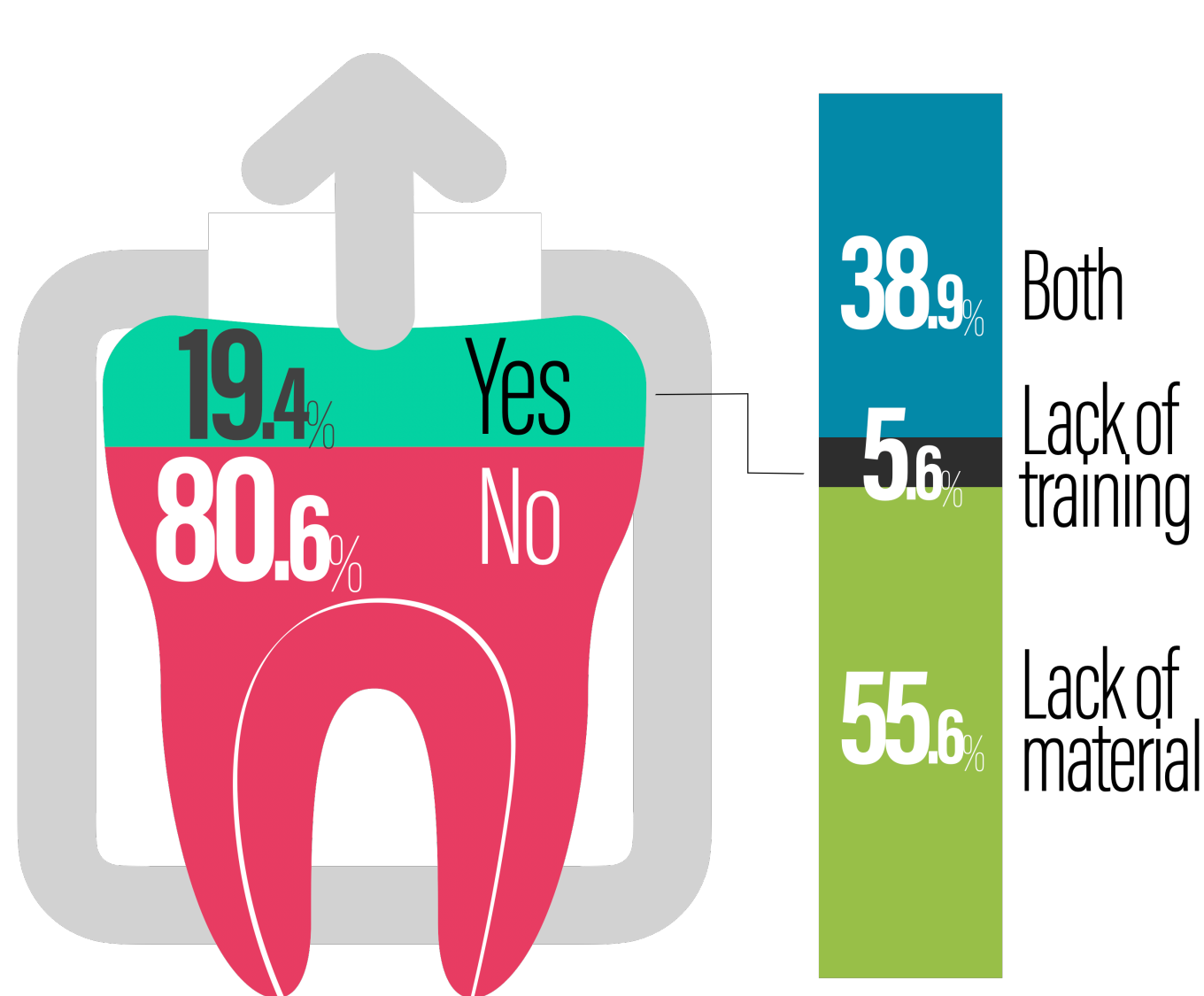
Training in PCC



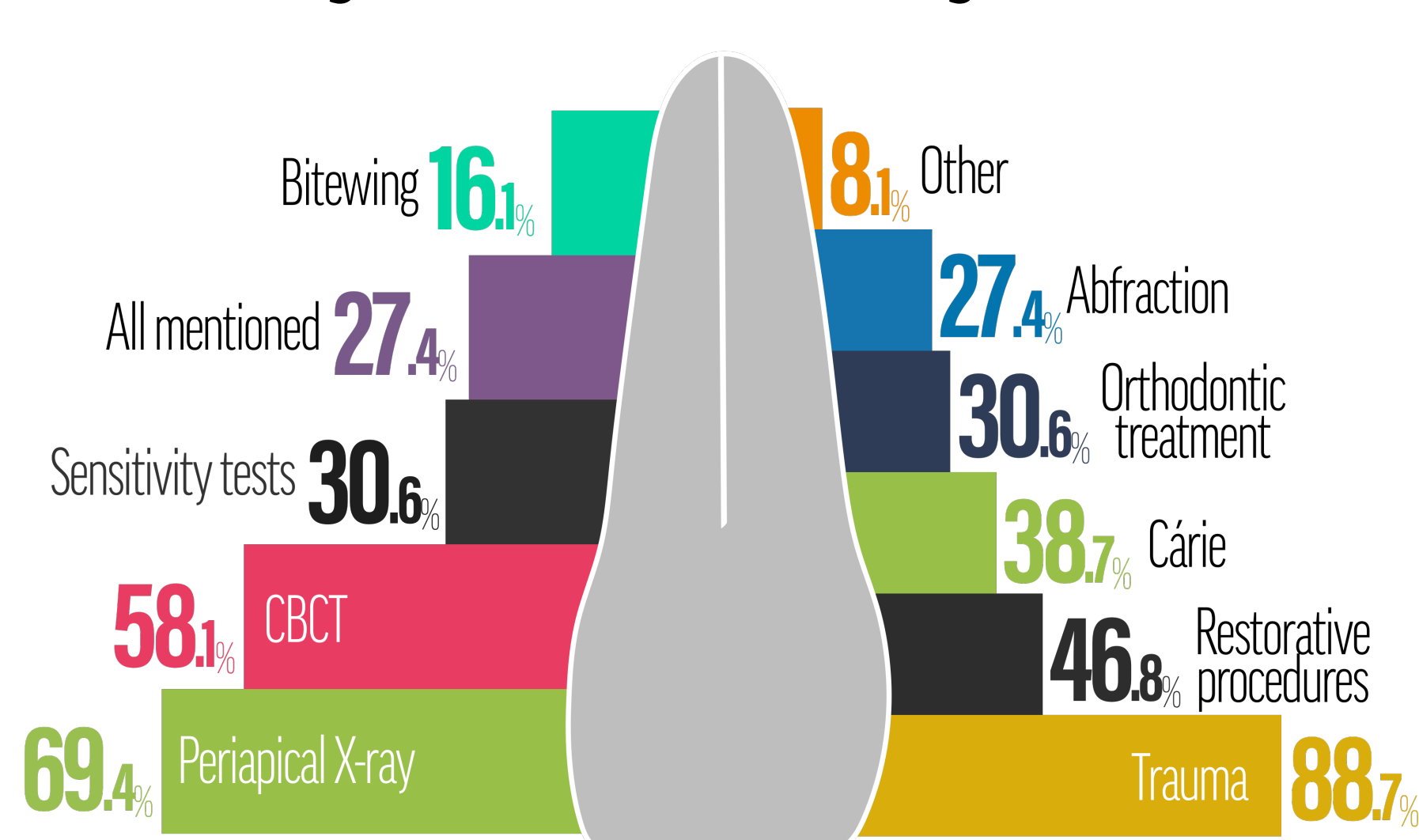
Rate of PCC in clinical practice



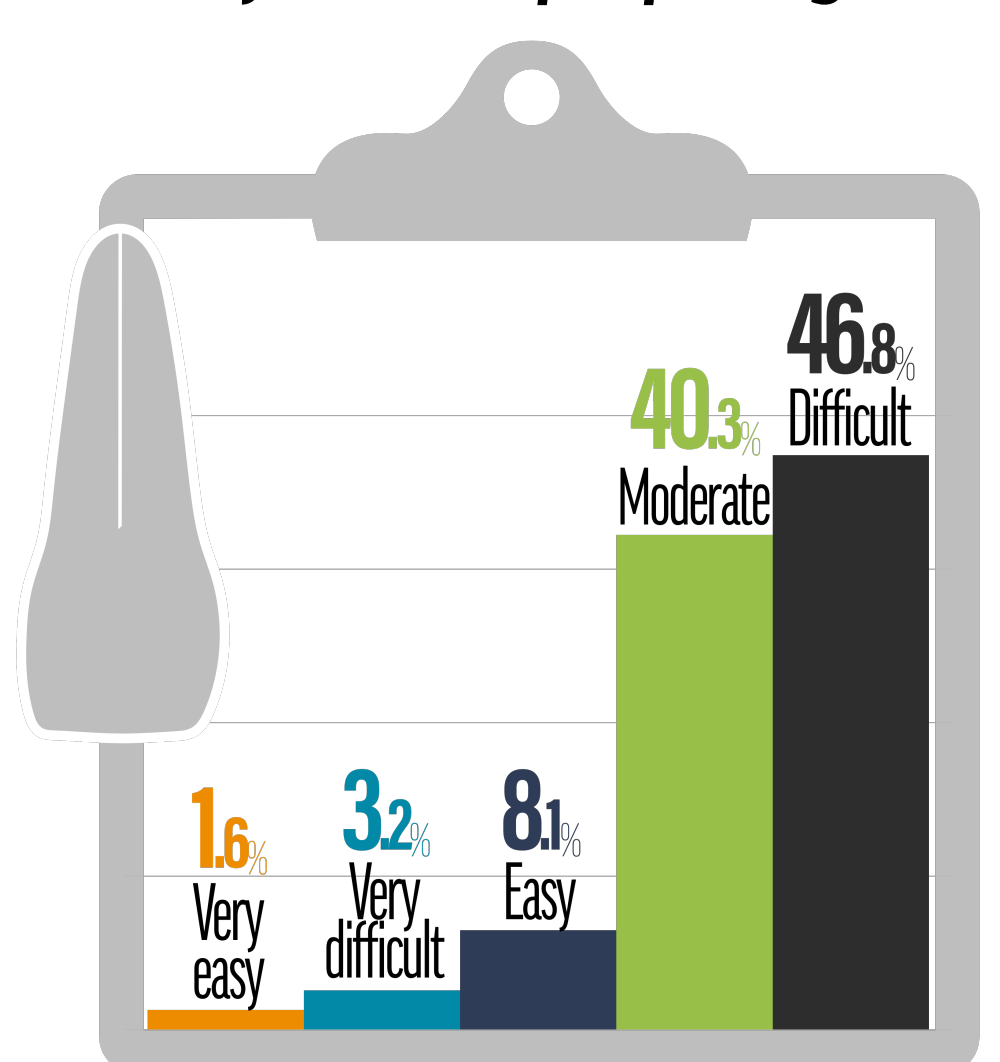
Referral rate of PCC cases and reason



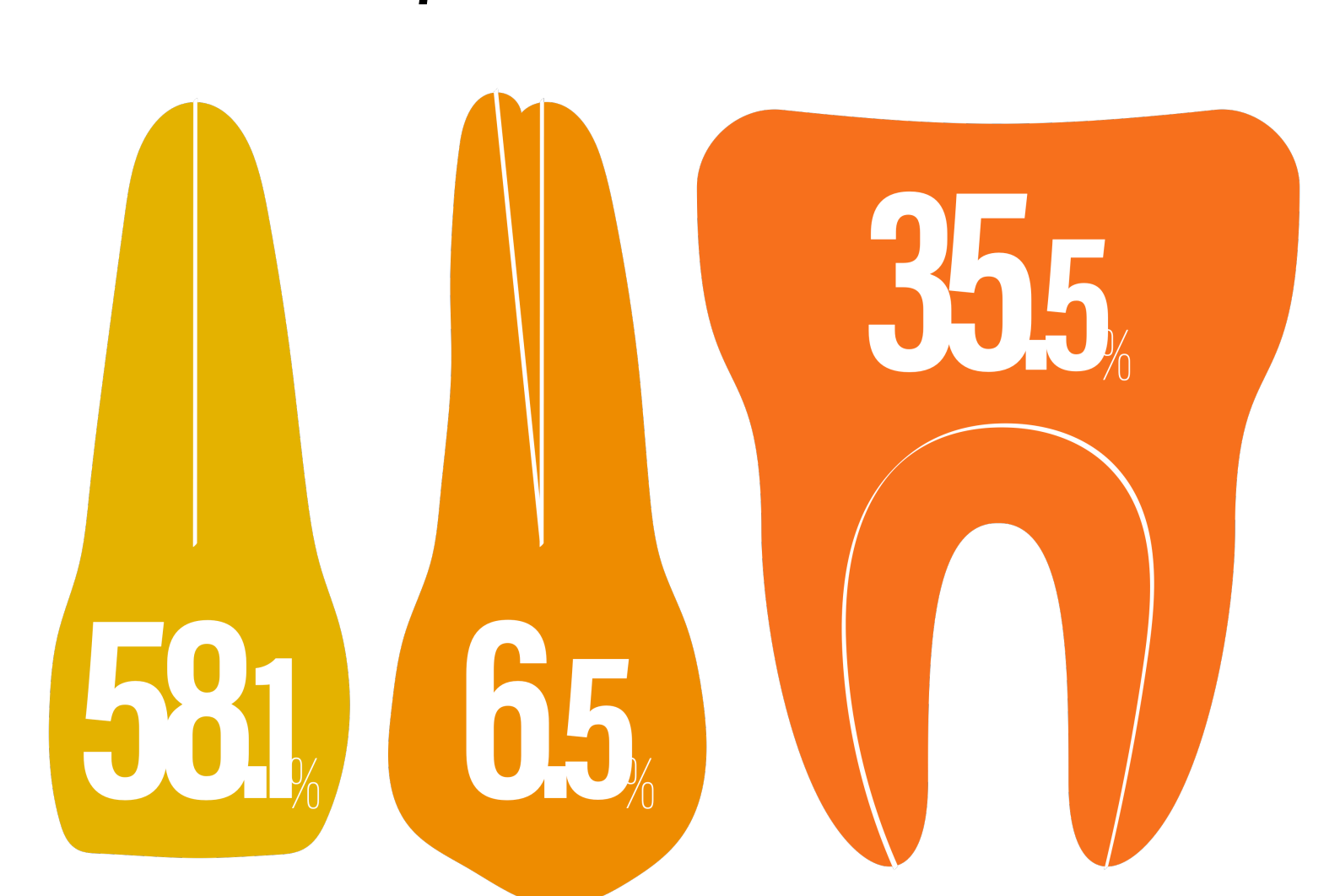
PCC diagnostic tools and etiological factors



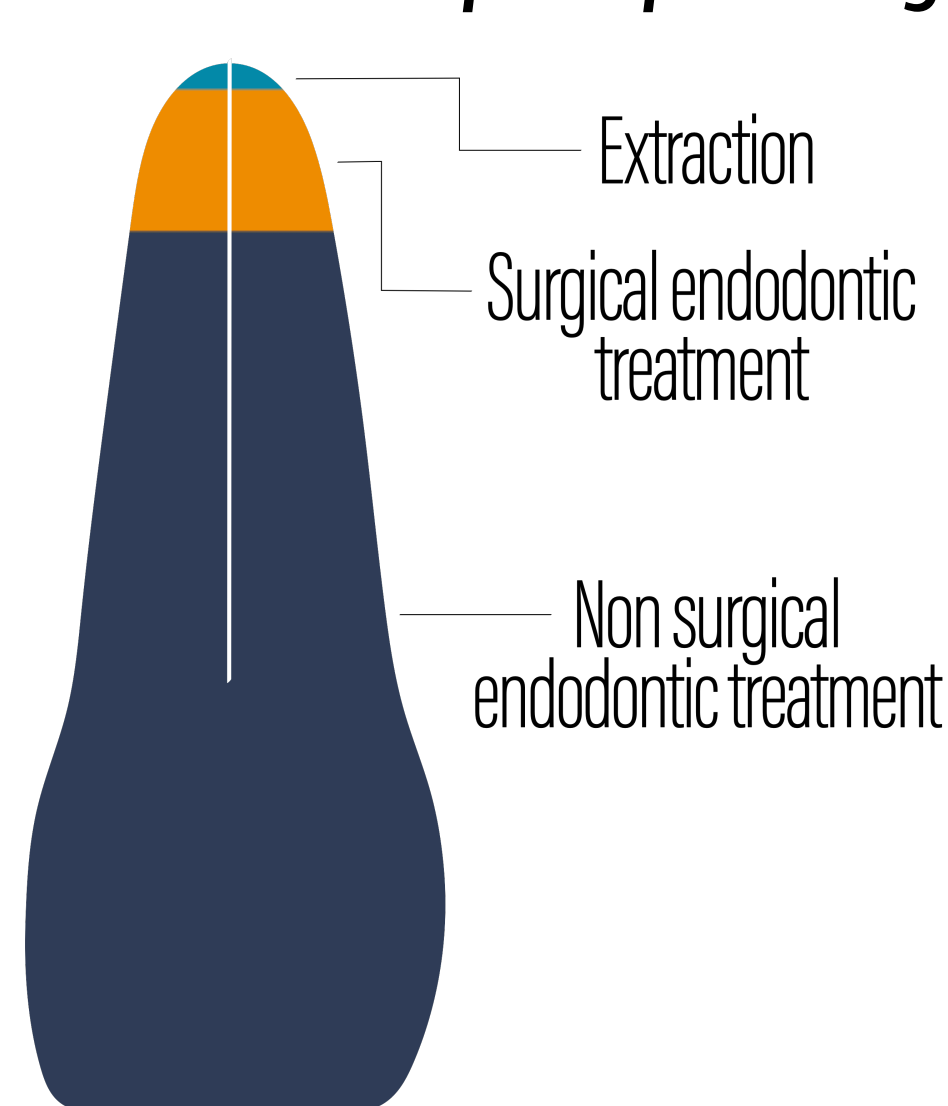
Difficulty of PCC pulp diagnosis



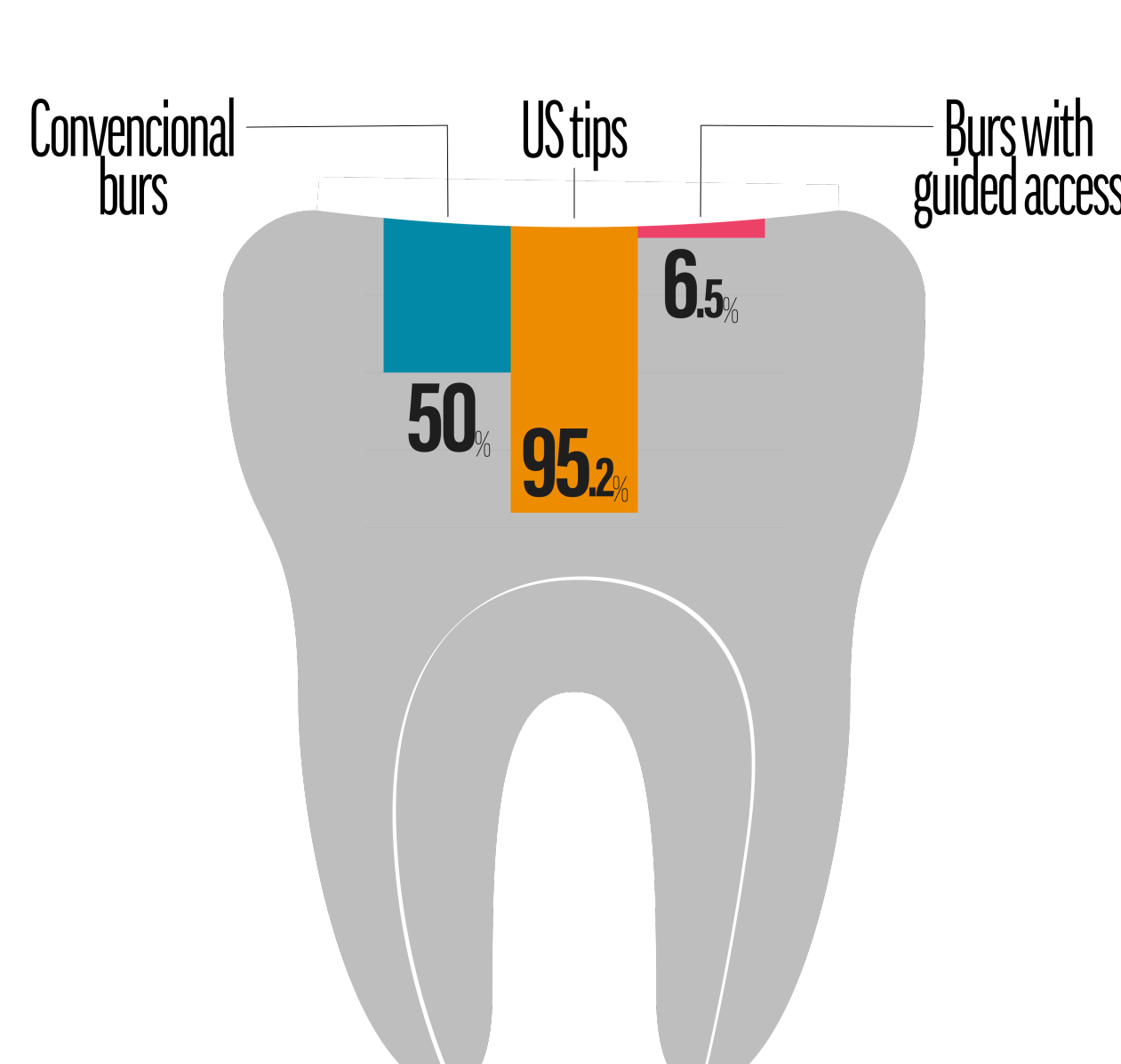
Most frequent tooth found with PCC



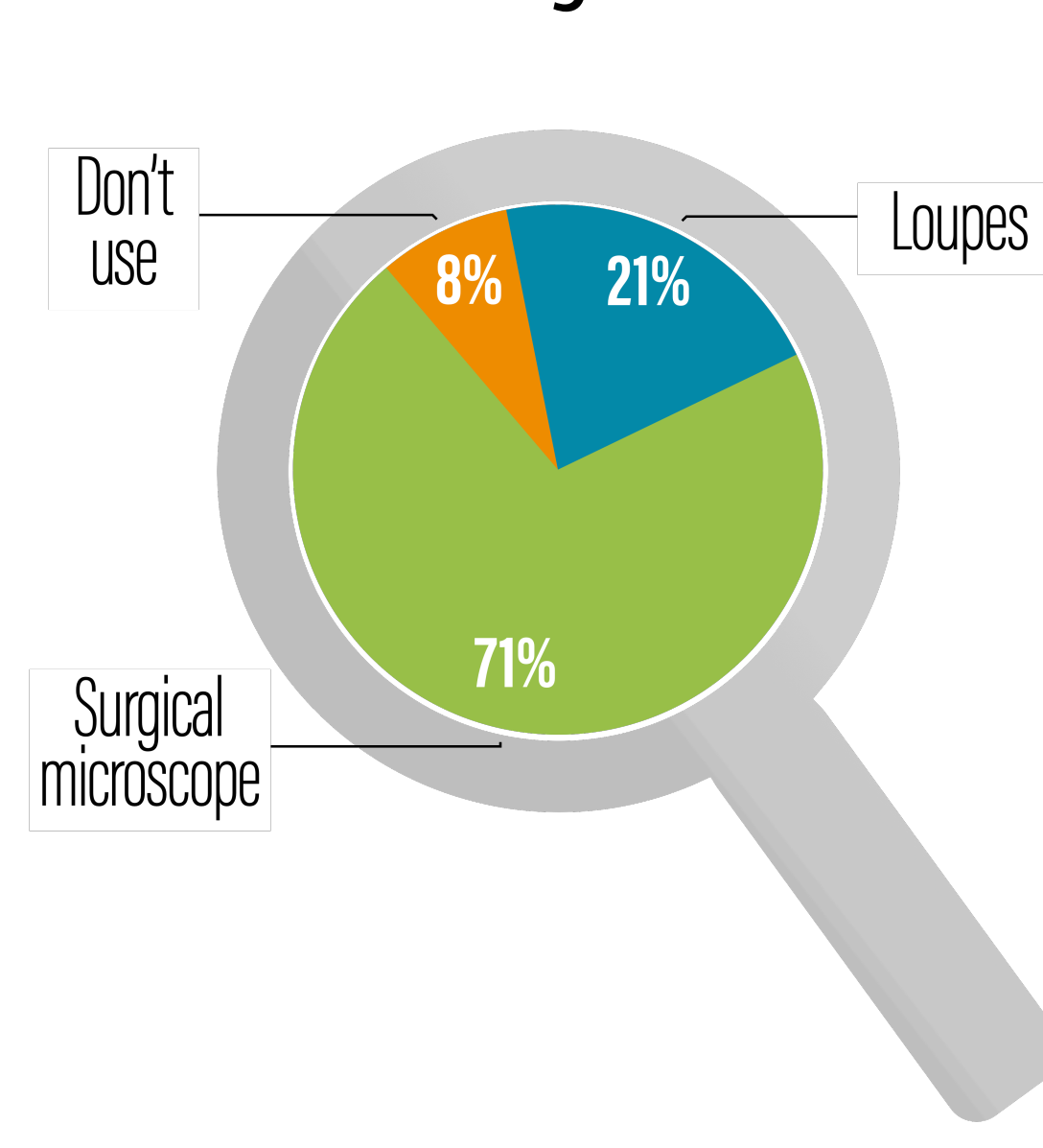
Most frequent treatment for teeth with PCC and apical pathology



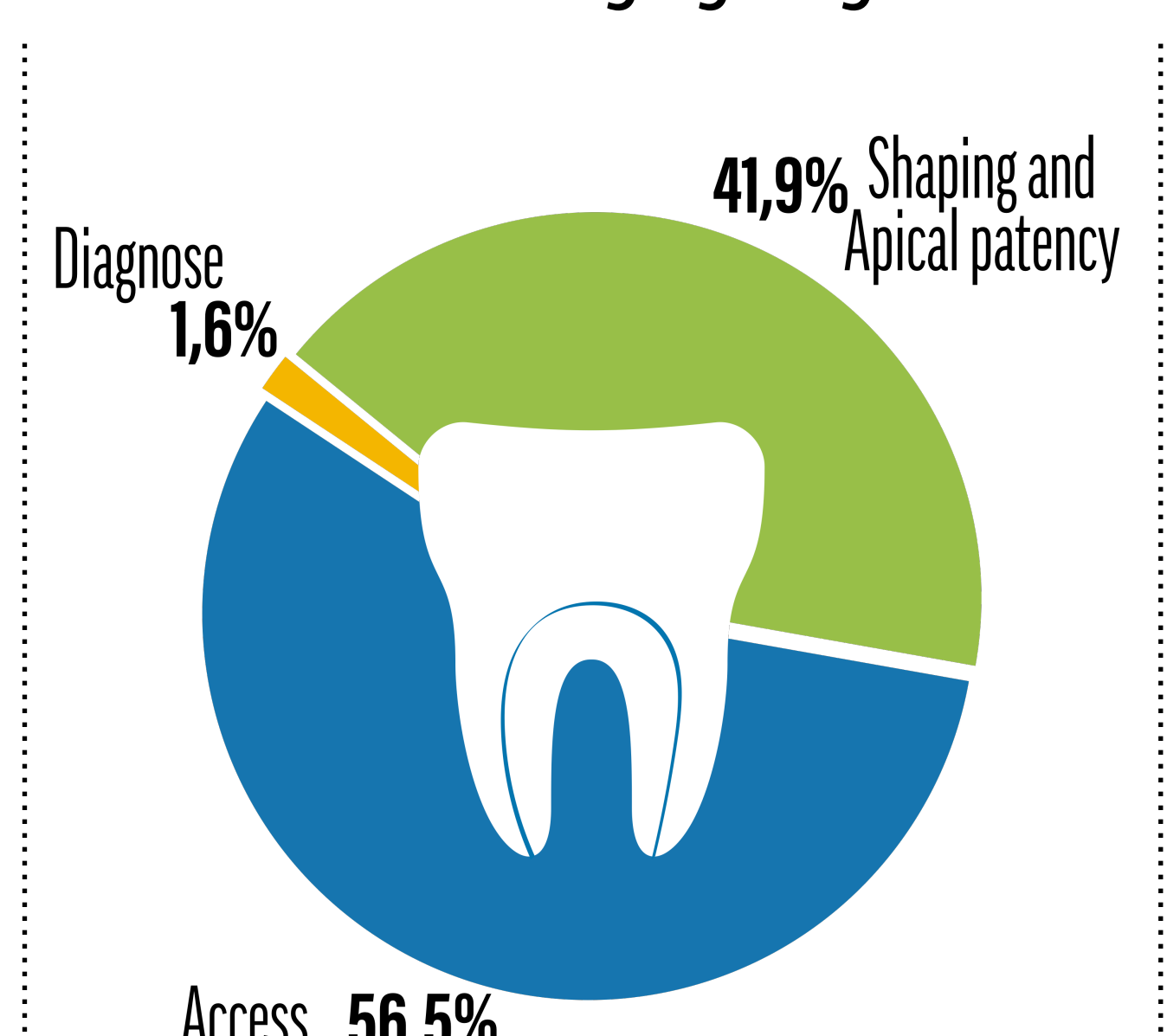
Materials used for access



Use of magnification



Most challenging stage



Desire for new materials development



CONCLUSIONS

Most respondents reported frequent encounters with PCC, especially in anterior teeth, identifying access cavity preparation as the most difficult stage, consistent with current literature. Magnification and CBCT were widely used, whereas guided access techniques remain uncommon. Over 80% of participants recognized the potential of novel tools (CBCT-guided access, AI, 3D printing, and augmented reality) to improve precision and safety.

CLINICAL RELEVANCE

These findings highlight the need for continued education and integration of advanced digital technologies and materials in endodontic practice.

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