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Ich bedanke mich bei den unten aufgeführten Kolleginnen und Kollegen für ihre wertvolle Mitarbeit, die sie in den vergangenen zwei Jahren geleistet haben.

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Frequency and anatomy of the retromolar canal – implications for the dental practice

KEYWORDS
retromolar canal,
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variation of mandibular canal,
cone beam computed tomography

SUMMARY

The retromolar canal (RMC) is an anatomical variant of the mandibular canal. Apart from blood vessels it also contains accessory nerve fibers and is clinically important, because its presence can account for failures of mandibular block anesthesias and in rare cases, injuries of its neurovascular bundle can lead to complications such as hemorrhages and dysesthesias. The aim of this retrospective case study was to analyze the frequency and anatomy of the RMC using cone beam computed tomography (CBCT) in order to draw conclusions for the dental practice.

A total of 680 CBCT scans comprising 1,340 mandibular sides were evaluated. A total of 216 RMCs (16.12%) were found. The most common appearance of the canal (39.82%) corresponded to type A1 (vertical course), whereas type C (horizontal course) occurred least often (6.02%). Mean measured values were 1.03 mm (SD = 0.27 mm) regarding the RMC diameter, 10.19 mm (SD = 2.64 mm) regarding the RMC height and 15.10 mm (SD = 2.83 mm) regarding the distance of the RMC to the second molar. Neither demographic factors nor the spatial resolution of the CBCT had a statistically significant impact on the frequency of the RMC.

Since the present study revealed a frequency of RMCs amounting to 16.12% (corresponding approximately to every sixth retromolar area), we recommend to spare it during surgery or to consider an additional locoregional anesthesia in the retromolar region. For preoperative diagnosis the CBCT has proved suitable, offering the possibility to select the spatial resolution depending on the indication, so that radiation exposure is reduced without a decrease in validity.

Introduction

The retromolar canal (RMC) is an anatomical variant of the mandibular canal (MC), which has gained only occasional attention in the literature and is not described in most anatomical textbooks (von Arx et al. 2011b), although a first cadaver study on the frequency and contained structures was conducted already in 1967. It was demonstrated that the content of the RMC comprised nerve fibers and blood vessels (Schejtman et al. 1967). The same results were obtained by other investigations using cadavers (Reich 1980) and clinical biopsies (Singh 1981).

The RMC originates from the MC distal of the third molar, runs in an anteroposterior direction and exits the bone through the retromolar foramen (RMF) in the area of the retromolar fossa or retromolar trigone, respectively (Ossenberg 1986, 1987) (Fig. 1).

The clinical significance of the RMC on the one hand is accounted for by the fact that apart from a molar branch of the inferior alveolar nerve (IAN) providing the sensory nerve supply of the mandibular molars, the RMC can also contain a so-called retromolar branch. This retromolar branch diverts from the IAN already in the vicinity of the mandibular foramen and can bypass the MC and enter the RMF from above before proceeding to the mandibular molars (Blanton et al. 2003). In about 10–20% of the cases, this anatomical variant can entail the risk that a mandibular block anesthesia fails (Boronat Lopez & Penarrocha Diago 2006). Thus, if the sensitivity of the mandibular molars persists after a block anesthesia, an additional infiltration anesthesia has to be made in the retromolar fossa.

On the other hand, it has been described that an aberrant buccal nerve originating from the IAN within the MC runs through the RMC and proceeds to the buccinator muscle after exiting through the RMF (Singh 1981; Jablonski et al. 1985). Injuries of this nerve associated for example with the surgical removal of third molars or of bone from the mandibular angle can lead to dysesthesia of the buccal mucosa as far forward as the canine region (Singh 1981). Finally, the risk of an intraoperative bleeding resulting from an injury of the contained blood vessels has to be considered as well (Langlais et al. 1985).

For most questions in daily practice, two-dimensional radiographs continue to be made, although these mostly do not allow depicting fine structures such as accessory canals and foramina (Bogdan et al. 2006; Rouas et al. 2007; Kuribayashi et al. 2010). Not only for this reason does cone beam computed tomography (CBCT) assume an increasingly important role in dental diagnostics (Eyrich et al. 2011; Lübbers et al. 2011). In comparison to multi-detector computed tomography (MDCT), CBCT offers the advantage of a reduced radiation exposure at comparable resolution and accuracy (Naitoh et al. 2010).

The aim of this retrospective case study was to investigate the frequency, course, and shape variants of the RMC in order to derive clinical recommendations for dental treatments in the posterior part of the mandible.

Materials and Methods

Patients of the Department of Oral Surgery of a Swiss dental university clinic, who had undergone a CBCT examination between January 2009 and February 2013, were included in the study and filed in an anonymized database. In most cases CBCT recordings served for a preoperative evaluation of mandibular third molars. Other indications were examinations of cystic lesions, bone pathologies, retained and displaced teeth, mandibular fractures, and planning of dental implants. Excluded were records with missing or incomplete depiction of the retromolar region (missing data volume), recognizable pathologies in the region (cysts, osteomyelitis, etc.), and prominent recording artifacts (motion and radiation artifacts) which made an assessment impossible.

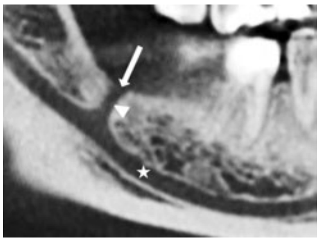


Fig. 1 Typical view of a retromolar canal (RMC) and its retromolar foramen (RMF) in the CBCT recording (sagittal sectional plane; arrow head = RMC; arrow = RMF; asterisk = mandibular canal)

All recordings were carried out using the KaVo 3D eXam device (KaVo Dental AG, Brugg, Switzerland) and exposure parameters of 90–120 kV and 3–8 mA (pulsed). Recordings of voxel edge lengths of 0.40 mm and 0.30 mm were made using a scan time of 8.5 s, whereas a scan time of 24 s was used for recordings of a voxel edge length of 0.25 mm. For each patient, the field of view (FOV) was adjusted to the individual indication and was not limited to a specific size. In order to enable comparisons of the left and right side of each patient, only bilateral recordings were included. Arbitrary three-dimensional reconstructions mainly in the coronal, sagittal, and transversal plane were made and evaluated using the eXamVision image processing software (version 1.9.3.13; KaVo Dental AG, Brugg, Switzerland) and a customary personal computer (model HP Compaq 6200 Pro microtower connected to a monitor model HP Compaq LA2306x; both Hewlett-Packard Company, Palo Alto, CA, USA). All measurements were carried out at maximum magnification on the monitor using an optical mouse (model HP DC172B; Hewlett-Packard Company, Palo Alto, CA, USA).

The RMC was examined with the aid of approximately sagittal reconstructions of the respective side of the mandible. The exact position of the observation plane could be freely selected by the examiner. A RMC was only considered as present if a distinct origin from the MC, a clear course within the image layers, and a RMF in the area of the retromolar trigone were visible. Cases of canal-like structures in which neither an origin from the MC nor a comprehensible course and visible RMF could be identified, were categorized as "RMC absent", even if its presence was suspected.

Based on their morpholgy and in accordance with previous studies (von Arx et al. 2011b), recorded RMCs were classified into five types (Figs. 2 and 3):

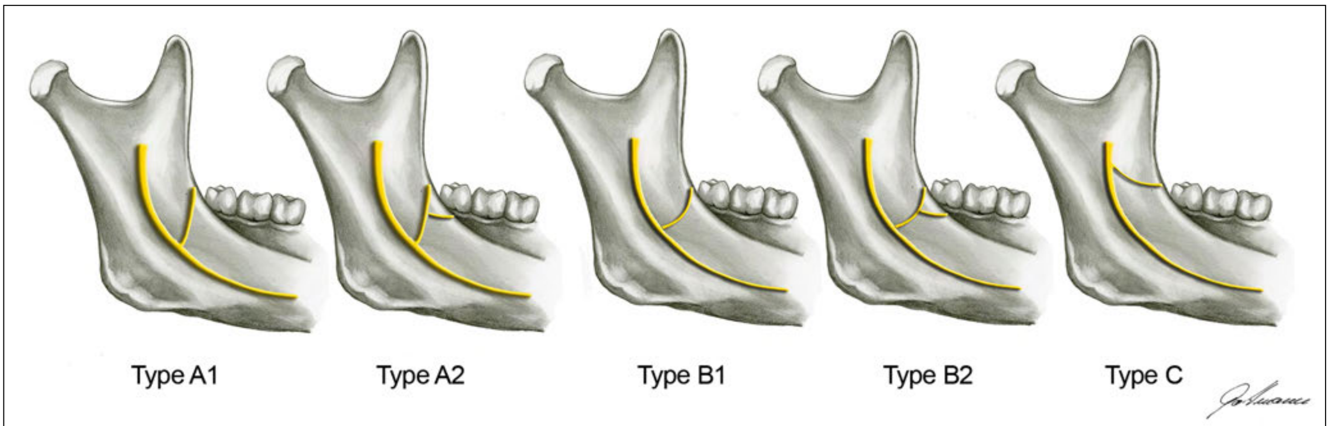


Fig. 2 Schematic representation of the various types of the retromolar canal (RMC) according to von Arx et al. (2011b): Type A1 (vertical course); type A2 (vertical course with horizontal branch); type B1 (curved course); type B2 (curved course with horizontal branch); type C (horizontal course)

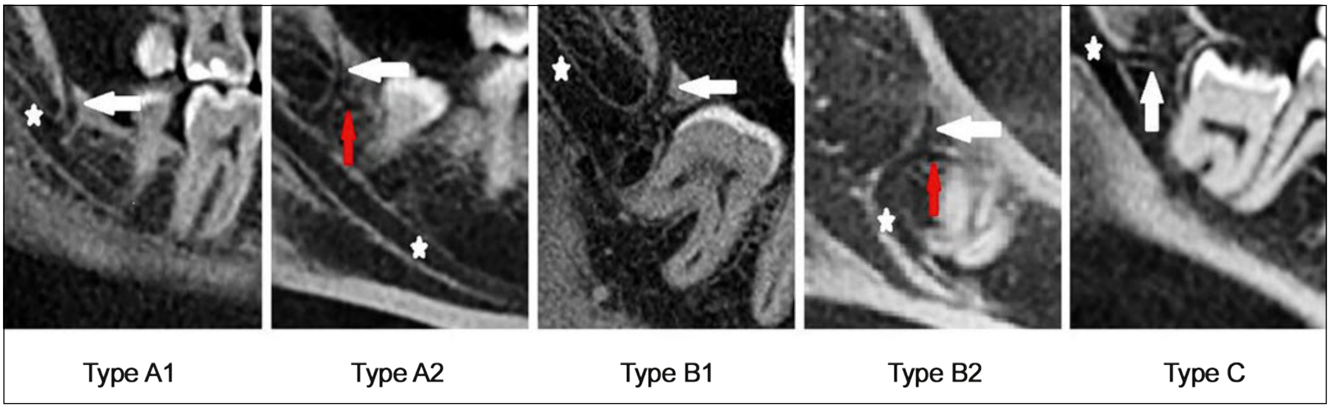


Fig. 3 Examples of the various types of the retromolar canal (RMC) in the CBCT recording (sagittal sectional plane): Type A1 (vertical course); type A2 (vertical course with horizontal branch); type B1 (curved course); type B2 (curved course with horizontal branch); type C (horizontal course); white arrow = RMC; red arrow = horizontal branch; asterisk = mandibular canal

- Type A1: vertical course
- Type A2: vertical course with horizontal branch
- Type B1: curved course
- Type B2: curved course with horizontal branch
- Type C: horizontal course

It should be noted that the above type C category included canals of both type II (deep horizontal course in the area of the mandibular angle) and type III (high horizontal course at the base of the coronoid process) according to Ossenberg (1987).

In accordance with the literature (von Arx et al. 2011b), the following measurements were carried out (Fig. 4):
- Distance of RMC to ipsilateral second molar: distance between the center of the RMF and the distal cemento-enamel junction of the second molar
- Height of RMC: vertical distance between the center of the RMF and the upper margin of the MC
- Diameter of the RMC measured 3 mm below the RMF

In addition, demographic data (age and gender) as well as the side of the mandible and the voxel edge length of the CBCT were collected.

Data were entered into Excel 2010 for Windows (Microsoft Corp., Redmond, WA, USA) and analyzed using IBM SPSS Statistics version 20 (IBM Corp., Armonk, NY, USA). Results of the statistical analyses revealing p-values <0.05 were considered statistically significant.

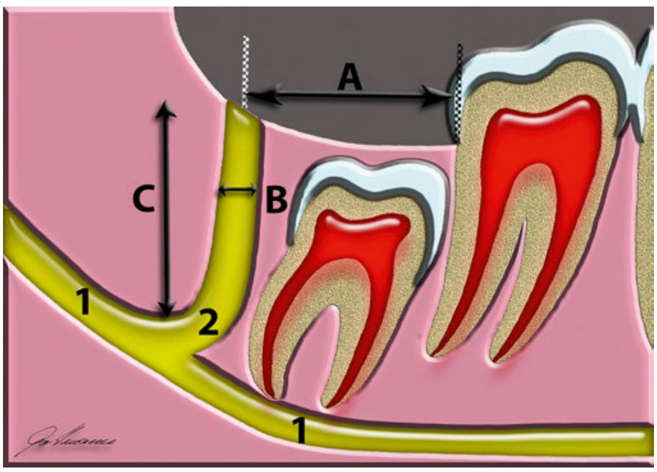


Fig. 4 Schematic illustration of the measurements carried out by analogy with von Arx et al. (2011b); 1 = mandibular canal; 2 = retromolar canal (RMC); A = distance of RMC to second molar; B = diameter of RMC; C = height of RMC

All patients had consented to the use of their data in scientific studies, and data originated from clinical treatments. Hence, the study design corresponded to the criteria of paragraphs 4a and b of the guidelines (version 21.5.2010) of the appropriate Cantonal Ethical Review Committee Zurich and, accordingly, was exempted from an individual ethics application. Moreover, the study design complied with the guidelines (version 2013) of the Declaration of Helsinki concerning Ethical Principles for Medical Research Involving Human Subjects.

Results

In total, 699 CBCT recordings were collected. For the following reasons, 58 mandibular sides could not be examined: 26 sides (both sides in 13 patients) because of incomplete representation of the retromolar area (missing data volume), 24 sides (both sides in three patients and one side in 18 patients) because of cystic lesions, six sides (both sides in three patients) because of motion artifacts, and two sides (one, each, in two patients) because of supernumerary teeth. In consequence, a total of 1,340 retromolar regions, 654 (48.81%) from males and 686 (51.19%) from females, were included in the analysis. Records were obtained from 680 patients, 332 (48.82%) males and 348 (51.18%) females. A bilateral evaluation was possible in 660 of the 680 patients.

On average the age of the patients at the time of the CBCT recordings was 29.89 years, the median amounting to 25.03 years, and the standard deviation (SD) to 12.94 years. The youngest patient was 8.70, the oldest 89.55 years old. Male patients exhibited a mean age of 31.76 years, female patients on average were 28.09 years old (Tab. I). Among the evaluable records, there were somewhat more from the left (674; 50.30%) than the right (666; 49.70%) side of the mandible (Tab. II).

In total, 216 RMCs were found in the 1,340 mandibular sides, corresponding to a frequency of 16.12%. There was a statistically non-significant preference of the left (17.21%) as against the right (15.02%) side (Tab. II). Among all RMCs, 116 (53.70%) were located on the left and 100 (46.30%) on the right side. The 216 RMCs were observed in 174 (25.59%) patients, of which 74 (42.53%) revealed a RMC only on the left and 58 (33.33%) only on the right side. In 42 (24.14%) patients, RMCs occurred bilaterally (Fig. 5).

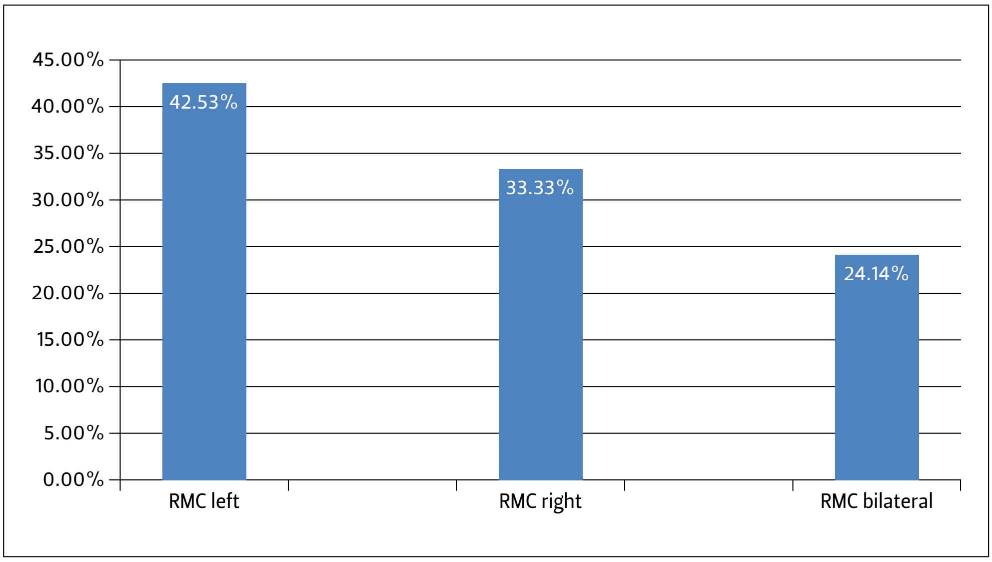
Tab. I Composition of the study population as collective group (total) and subdivided into males and females

	Total	Males	Females
Number of mandibular sides	1,340 (100%)	654 (48.81%)	686 (51.19%)
Number of patients	680 (100%)	332 (48.82%)	348 (51.18%)
Age distribution of patients (years)			
Mean	29.89	31.76	28.09
Median	25.03	26.43	24.40
Standard deviation	12.94	14.02	11.55
Minimum	8.70	8.70	12.59
Maximum	89.55	76.08	89.55

Tab. II Absolute and relative frequency of the retromolar canal as a function of mandibular side, gender, and voxel edge length

		Absolute frequency	Relative frequency (%)
Side (n=1,340)	Left	116 of 674	17.21
	Right	100 of 666	15.02
Gender	Males	115 of 654	17.58
	Females	101 of 686	14.72
Voxel edge length	0.40 mm	191 of 1,207	15.82
	0.30 mm/0.25 mm	25 of 133	18.80

Fig. 5 Side distribution of identified retromolar canals (RMC; relative frequency; n=216)



In regard to the presence of RMCs, there was also a statistically non-significant preponderance of the male gender. Thus, a RMC was found in 115 of 654 (17.58%) sides examined in male patients and in 101 of 686 (14.72%) sides examined in female patients (Tab. II). Referred to the total number of 216 sides, 115 (53.24%) RMCs were identified in male patients, whereas the remaining 101 (46.76%) RMCs were found in female patients. Age did not have a significant influence on the occurrence of RMCs.

Out of the 216 RMCs, 86 (39.82%) corresponded to type A1, 41 (18.98%) to type A2, 52 (24.07%) to type B1, 24 (11.11%) to type B2, and 13 (6.02%) to type C (Fig. 6). As far as type C was concerned, only canals of the type II according to Ossenberg (1987) were observed.

In recordings of a voxel edge length of 0.40 mm, a RMC was found in 191 of 1,207 (15.82%) sides. At higher resolutions of voxel edge lengths <0.40 mm, a RMC was recognized in 25 of 133 (18.80%) sides (Tab. II). Thus, there was a tendency that

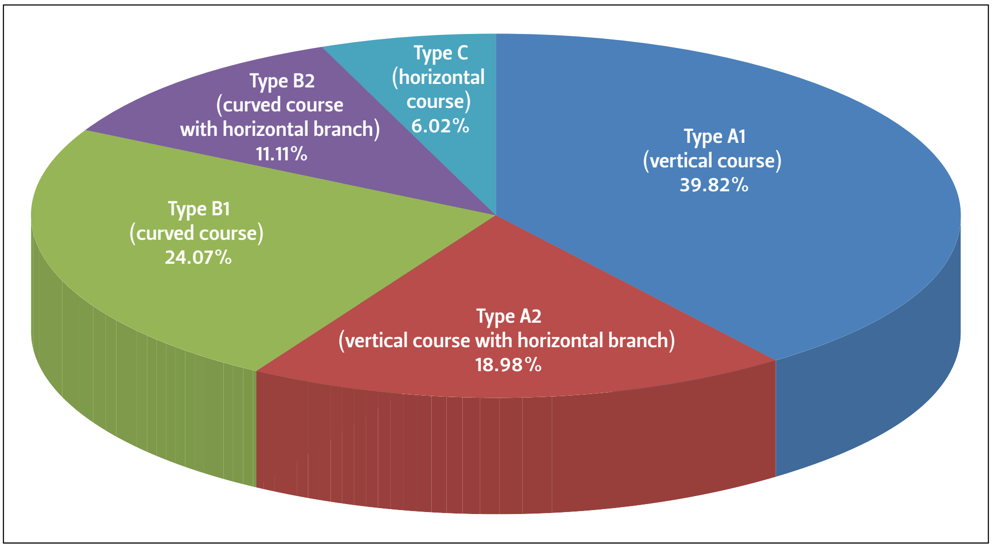


Fig. 6 Relative frequency of canal types (n=216); classification according to von Arx et al. (2011b)

Tab. III Statistical parameters regarding the height of the retromolar canal (RMC), the diameter of the RMC, and the distance of the RMC to the distal cemento-enamel junction of the adjacent second molar (CEJ of M2) as well as respective means and standard deviations (SD) as a function of gender and the presence of a wisdom tooth (M3)

	Height RMC (mm)	Diameter RMC (mm)	Distance to CEJ of M2 (mm)
Mean	10.19	1.03	15.10
Median (SD)	10.04 (2.64)	0.90 (0.27)	15.03 (2.83)
Minimum	1.06	0.40	2.77
Maximum	17.59	2.00	24.80
95%-confidence interval	9.83–10.54	1.00–1.07	14.71–15.49
Means (SD)			
Males	10.37 (2.89)	1.04 (0.26)	15.40 (2.69)
Females	9.98 (2.32)	1.03 (0.27)	14.78 (2.95)
M3 missing	9.32 (1.97)	1.02 (0.22)	15.36 (3.88)
M3 present	10.33 (2.62)	1.03 (0.28)	15.07 (2.66)

more RMCs were identified at higher resolution. However, this was not statistically significant.

The mean diameter of the RMC amounted to 1.03 mm, the median and SD being 0.90 mm and 0.27 mm, respectively. On average, the height of the RMC was 10.19 mm (median=10.04 mm; SD=2.64 mm). The mean distance of the RMC to the second molar amounted to 15.10 mm (median=15.03 mm; SD=2.83 mm; Tab. III). Neither of these measurements was significantly affected by age. Although male patients on average exhibited higher measured values (Tab. III), the effect of gender was statistically non-significant.

Associated with 186 of 216 (86.11%) RMCs, a third molar existed on the same side. If a wisdom tooth was present, RMCs tended to exhibit smaller distances to the cemento-enamel junction of the second molar than RMCs occurring in the absence of a third molar. Moreover, a statistically significant ($p=0.024$) influence of a wisdom tooth on the height of the RMC was noted. Thus, markedly higher measurements were obtained from RMCs in the presence than the absence of a third molar (Tab. III).

Discussion

In the present study, 216 RMCs were found in 1,340 examined mandibular sides, corresponding to a frequency of 16.12%. Other CBCT-based studies using markedly lower number of cases partly arrived at deviating values: 14.6% in 233 sides evaluated (Lizio et al. 2013), 25.6% in 121 sides (von Arx et al. 2011b), 37% in 90 sides (Kawai et al. 2012), 65.3% in 254 sides (Patil et al. 2013). Cadaver studies yielded frequencies of 0–72% (Patil et al. 2013). Presumably differences between the studies are not only attributable to deviating sizes of the study populations, but also to varying definitions of the RMC, different methods of measurement and – in the CBCT-based investigations – deviating interpretations of the images. Hence, a direct comparison of the findings is not possible.

To our knowledge, the influence of voxel edge length on the frequency of RMCs was examined for the first time in the present study, evaluating CBCT recordings of various resolutions of 0.40, 0.30, and 0.25 mm voxel edge length. Since no effect on RMC frequency was to be expected from a change in voxel edge length of 0.05 mm, and since the numbers of recordings made at resolutions of 0.30 mm and 0.25 mm amounted to only 97 and 36, respectively, the latter were grouped and compared with the sides recorded at a resolution of 0.40 mm (n=1,207). Due to the markedly different sample sizes of 133 (0.30 mm and 0.25 mm) and 1,207 (0.40 mm), the statistical evaluation of a possible influence of voxel edge length on the occurrence of RMCs is problematic. Correspondingly, the data analysis revealed a tendency (higher resolution=higher frequency), but the effect was not statistically significant. The respective literature is inconsistent: two studies carried out at very high resolution (0.08 mm voxel edge length) showed entirely differing frequencies of 25.6% (von Arx et al. 2011b) and 65.3% (Patil et al. 2013). Notwithstanding a higher resolution (voxel edge length of 0.125 mm) than that used in the present investigation, Lizio et al. (2013) found a lower frequency (14.6%). Thus it has to be noted that the currently available data do not support the hypothesis of Patil et al. (2013) that more RMCs are detected at higher CBCT resolution.

Besides the voxel edge length, other technical variables of a CBCT-unit also constitute influencing factors. Thus, among other things, the sensor, field of view (FOV), scan duration, and device voltage play a role. So far, however, there are no consistent scan protocols in dentistry offering an indication-dependent standardization of scan parameters, which on the one hand could contribute to an improvement in image quality and on the other would yield the smallest possible radiation exposure of the patients according to the ALARA-principle (as low as reasonably achievable; Spin-Neto et al. 2013).

Conceivably the unrestricted choice of the sectional plane is also an important influencing variable. For the optimal analysis of a three-dimensional dataset, the examiner must be allowed to freely evaluate all planes of the entire volume rather than being committed to predefined planes (Lübbers et al. 2012a; Lübbers et al. 2012b). Unfortunately, exact specifications on this are missing in most reports.

By contrast, the superiority of the CBCT over the orthopantomogram regarding the representation of the RMC is well established. Thus, when relying on CBCT, a comparative study revealed a RMC in 25.6% of the examined sides, whereas using orthopantomograms, the respective value amounted to only 5.8% (von Arx et al. 2011b).

Similar to the current literature, the present study could not establish an influence of the mandibular side (Bilecenoglu & Tuncer 2006, von Arx et al. 2011b, Patil et al. 2013), age (von Arx et al. 2011b), or gender (von Arx et al. 2011b, Patil et al. 2013) on the occurrence of the RMC.

In 24.14% of the patients in which a RMC was present, it occurred bilaterally. This slightly exceeded the overall frequency of 16.12%. Other studies documented 5.6% bilateral presence associated with an overall prevalence of 7.7% (Sawyer & Kiely 1991) or 20.5% bilateral presence associated with an overall prevalence of 24.5% (Priya et al. 2005). Even if occasionally an increased probability of a bilateral occurrence has been reported (Sagne et al. 1977), the literature as a whole as well as our data do not suggest that the presence of a RMC on one side has any predictive power for its existence on the opposite side.

In the present study, the type A1 of the RMC (vertical course) occurred most frequently (39.82%), followed by types B1 (24.07%), A2 (18.98%), B2 (11.11%) and C (6.02%; Fig. 6). A very similar distribution in the same sequence was also arrived at by von Arx et al. (2011b), although in their study, type C was not found or possibly defined otherwise. Patil et al. (2013) observed a frequency of 85.27% regarding canal type B, but these authors used a deviating classification. The type B of Patil et al. (2013) approximately corresponds to our type B1. Unfortunately there are different, non-compatible classifications concerning canal morphologies (Ossenberg 1987; Narayana et al. 2002; von Arx et al. 2011a; von Arx et al. 2011b; Patil et al. 2013), making a final comparison with the literature difficult.

In our study, an average canal diameter of 1.03 mm (SD=0.27 mm) was determined irrespective of age or gender. This is in good agreement with studies in which measurements had been carried out identically (von Arx et al. 2011b). Other publications indicate somewhat differing values, although without specification of a measuring point (Narayana et al. 2002) or with a deviating measuring concept (Patil et al. 2013).

The average canal height of 10.19 mm (SD=2.64 mm) is also in good agreement with the value obtained by von Arx et al. (2011b) using the same method of measurement. However, it is striking that von Arx et al. (2011b) found a distinctly greater minimum value. The definition of the height of the RMC as distance from the center of the RMF to the upper margin of the MC in part entails very small measurements if type C RMCs follow a flat, horizontal course (type II according to Ossenberg 1987), whereas rather high measurements are obtained from type C RMCs located way up at the base of the coronoid process (type III according to Ossenberg 1987). Based on the fact that in comparison with the present study, von Arx et al. (2011b) reported similar mean and maximum values regarding RMC height, it can be assumed that the latter authors defined only type III canals according to Ossenberg (1987) as type C. It is debatable whether instead of the RMC height, the length of the RMC, defined as the distance between the center of the RMF and the branch point of the RMC from the MC, should be measured in all canal types. However, for reasons of comparability, we deliberately refrained from this.

In the present study, no significant influence of age or gender on RMC height was noted, although a tendency to larger values was observed in males. Von Arx et al. (2011b) found significantly higher values in male patients, but annotated that males did not exhibit inherently greater values of mandibular height in the retromolar area and, hence, the height of the RMC rather depended on its location within the mandible.

Regarding the distance of the RMC to the second molar, the present study revealed an average of 15.10 mm (SD=2.83 mm) with a range of 2.80–24.80 mm. In other investigations, means of 15.16 mm (SD=2.39 mm) with a range of 12.32–22.32 mm (von Arx et al. 2011b) and of 11.91 mm (SD=6.71 mm) with a range of 9.50–24.27 mm (Bilecenoglu & Tuncer 2006) were reported. Except for a difference in the minimum value of 2.80 mm as against 12.32 mm, the measurements of our study are in good agreement with the CBCT-based data of von Arx et al. (2011b). Similar to the findings regarding RMC height, the discrepancy in minimum values is possibly due to a different definition of canal type C. Based on their cadaver study, Bilecenoglu & Tuncer (2006) indicated an average of 11.91 mm for the distance of the RMC to the cemento-enamel junction (CEJ) of the second molar. However, this measurement was not made from the center of the RMF to the CEJ, but rather from the mesial margin of the RMF to the distal edge of the second molar (shorter distance). Moreover, only four mandibular sides with existing second molars were available for evaluation. Therefore, data might be little representative.

In our study we could not detect an influence of age or gender on the distance of the RMC to the second molar. By contrast, age was a significant factor in other investigations. Younger patients examined by von Arx et al. (2011b) exhibited larger measurements. As a conceivable reason it was assumed that in comparison to older patients, younger individuals more frequently exhibited third molars which could impair a distal tipping or minor distal migration of the second molar. In this context we evaluated the influence of an existing wisdom tooth on RMC height, diameter, and distance to the second molar. In contrast to the study of von Arx et al. (2011b), we noted that particularly cases of absent third molars were prone to larger distances between the RMC and second molars. Statistically significant was the influence of the wisdom tooth on RMC height ($p=0.024$). Thus, in the presence of a third molar, RMCs exhibited distinctly higher measured values than in the absence of wisdom teeth. We presume that in the presence of a third molar, more surrounding bone exists both in the vertical and horizontal direction, whereas in cases of missing or already removed wisdom teeth, the surrounding bone is less prominent or gradually disappears following the extraction. On the one hand, this results in larger distances of the RMC to the second molar and on the other, it leads to smaller values of RMC height.

Conclusions

The present study relying on CBCT revealed a frequency of the RMC of 16.12%, corresponding to an occurrence in approximately every sixth retromolar region.

Therefore, when carrying out surgical interventions with retromolar access, the treating dentist should take into account the possible presence of this anatomical variant in order to be able to spare it in view of potential complications such as bleedings or dysesthesias. In particular, however, the RMC should also be known as a possible cause of persistent sensitivity of mandibular molars in spite of a mandibular block anesthesia. In these situations, an additional infiltration anesthesia in the retromolar region should be considered.

CBCT is well suited for the preoperative diagnostics of the RMC. With regard to radiation protection, it allows to choose an indication-dependent, reduced spatial resolution without the risk of a decreased validity.

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Résumé

Le canal rétromolaire (CR) est une variante anatomique du canal mandibulaire. Il contient des vaisseaux sanguins et des fibres nerveuses accessoires. Son importance clinique se manifeste par l'échec de l'anesthésie tronculaire et rarement par des complications, comme des saignements et des dysesthésies, causées par une blessure de son faisceau neurovasculaire. L'objectif de cette étude rétrospective était d'examiner la fréquence et l'anatomie du CR dans la tomographie volumétrique numérisée à faisceau conique (CBCT) et d'en tirer des conclusions pour la pratique dentaire.

En tout, 680 CBCT avec 1340 sites mandibulaires ont été évaluées. En résumé, on a trouvé 216 CR (16,12%). Le type de canal le plus fréquemment retrouvé fût le type A1 (cours vertical) avec 39,82%, le type C (cours horizontal) fût le moins représenté (6,02%). Les valeurs moyennes étaient de 1,03 mm de diamètre (écart type=0,27 mm), de 10,19 mm de hauteur (écart type=2,64 mm) et de 15,10 mm de distance du CR à la deuxième molaire (écart type=2,83 mm). Ni les facteurs démographiques, ni la résolution spatiale n'avaient d'effet significatif sur la fréquence du CR.

A cause de la fréquence du CR de 16,12% dans la présente étude (environ chaque sixième région rétromolaire), il est recommandé de l'épargner pendant une intervention chirurgicale, ou respectivement d'envisager une anesthésie locale supplémentaire dans la région rétromolaire. Pour le diagnostic préopératoire, la CBCT se révèle être appropriée en choisissant la résolution spatiale indiquée. Ainsi l'exposition à la radiation est diminuée sans réduire sa valeur d'expression.

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