Massimiliano Pisa
Italy

For some time, we have been benefitting from IPS e.max® CAD-on/Veneering Solutions (Ivoclar Vivadent), a working technique that combines lithium disilicate (LS2) and zirconium dioxide (ZrO2). In addition to IPS e.max ZirCAD and IPS e.max CAD blocks (Ivoclar Vivadent), the technique includes the use of a high-frequency vibrating device (Ivomix, Ivoclar Vivadent) and a special thixotropic fusion glass-ceramic to join both of the ceramic structures. In this case report, we will demonstrate how to implement the technique step by step in order to achieve natural-looking and functional restorative results.

In our case, the patient visited the dentist because she was unhappy about her maxillary anterior restoration. The ceramic material had flaked off at several sites and the function of the metal–ceramic bridge was impaired. Consequently, she wanted to have it replaced (Fig. 1).

A detailed examination of the clinical situation established that, owing to severe bone atrophy, teeth #11 and #21 were not suitable for anchoring a new dental prosthesis to them and that they would have to be extracted. Since the patient was unwilling to undergo augmentative procedures, placing an implant-retained prosthesis was not an option. Instead, we decided to install a fixed bridge that would be anchored to abutment teeth #14 and #12 on one side and to teeth #24 and #22 on the other side. The area surrounding teeth #11 and #21 would have to be reconstructed with artificial gingiva.

Treatment procedure

After removal of teeth #11 and #21, the extraction site was allowed to heal for a sufficient period (Fig. 2). Meanwhile, the technician fabricated a diagnostic temporary for evaluation of the aesthetic and functional parameters. In order to achieve a harmonious smile, the incisal edges of the anterior teeth had to be lengthened considerably (Figs. 3a & b).

During the try-in, the contour of the artificial gingiva was determined and shaped (Fig. 4). Based on the wax-up, the technician created a temporary that was allowed to heal for a sufficient period (Fig. 5). The temporary in its planned, ideal situation — Fig. 6a & b: The temporary and master model were digitized (CAD software) — Fig. 7: The ZrO2 framework was prepared for milling (CAM software) — Fig. 8: The ZrO2 framework being milled — Fig. 9: As the primary structure, the sintered ZrO2 framework provided the base for the digital production of the veneering structure.

Easy and effective — Long-span bridges fabricated with the CAD-on technique
function of the materials involved in the treatment process, and excellent collaboration led to a highly aesthetic result without the need for surgical intervention. The procedure ideally combines two outstanding materials and has proven to be both reliable and cost-effective.

Acknowledgement: This case was conducted in collaboration with dental technician Paolo Vigiani and Dr Leonardo Bacherini from Florence. I would like to thank them both for their support.

References
2 Das Dental Labor, 59/12 (2010), 16-25.

The high strength of the ceramic has been confirmed in a study that compared bridges manufactured using the CAD-on technique with ZrO2 bridges veneered using an individual layering technique. The results of the study showed that the strength of the CAD-on bridges was twice as high (2,188 ± 305 N) as the strength of conventionally veneered bridges.

In this case, accurate diagnostic measurements taken at the prescriptive stage, in-depth knowledge of the materials involved in the treatment process, and excellent collaboration led to a highly aesthetic result without the need for surgical intervention. The procedure ideally combines two outstanding materials and has proven to be both reliable and cost-effective.

Acknowledgement: This case was conducted in collaboration with dental technician Paolo Vigiani and Dr Leonardo Bacherini from Florence. I would like to thank them both for their support.
Cone Beam Computed Tomography: Is dentistry ready for a new standard of care?

DeLee M. Whitesides
USA

Since its commercial introduction into dentistry in 2001, cone beam computed tomography (CBCT) has been rapidly evolving into a new standard of care in maxillofacial imaging. In just over a decade, CBCT has exploded onto the dental landscape and permitted dental professionals a degree of three-dimensional (3-D) anatomic truth in maxillofacial imaging previously unavailable and unattainable.

Like many other new technologies, which have progressed from the extraordinary to the ordinary and thus gained acceptance by professionals and patients, CBCT has advanced from exceptional use to almost commonplace use in dentistry as cost decreases, access to the technology increases, and potential adverse patient interaction (i.e., radiation exposure) is attenuated. Today, CBCT is seen by many in dentistry as the standard operating procedure for many dental procedures, good, orthodontic, orthodontic, or endodontic cases.

The advancement of CBCT in dentistry has caught the attention of manufacturers of radiologic equipment. In 2001, only one company sold a CBCT system. In 2014 there are at least 20 companies selling CBCT machines and technology. Dr. Lee M. Whitesides, a leading distributor of dental equipment has seen CBCT sales expand from 5 percent of their digital imaging sales to almost 50 percent of digital imaging sales in the last five years.

CBCT has also been recognised by general dentists and specialists as a means by which they can better plan and distinguish their practices as being on the vanguard of technology in patient care. Today’s patients expect their dentist and physicians to be contemporary with technology and services. CBCT provides the doctor with a technology, which not only has significant advantages in treating patients but also has a noteworthy “wow” factor as the 3-D images are seen on a large screen in “real time” for the doctor and patient to view.

CBCT, like plain film radiographic studies, may be considered a revenue generator for a practice. The more a CBCT machine is utilised, the more revenue it will generate. Additionally, the owner may allow others in the profession to utilise the machine for a fee, thereby reducing his overall cost of operation.

Standard of care is a legal not a medical or dental concept. Standard of care is rapidly evolving as methods and techniques in patient care improve. An appropriate definition for standard of care may include such language as: the dentist is under duty to use that degree of skill and care which is expected of a reasonably competent and prudent dentist under the same or similar circumstances.

The widespread acceptance of CBCT technology in dentistry has developed guidelines and accreditation criteria for 3-D CBCT imaging. Thus CBCT appears to have satisfied both the Frey and Daubert criteria for acceptance as a standard of care technology.

In many jurisdictions and in Federal court, the Frey standard is superseded by the Daubert standard. The Daubert standard is used by a trial judge to make a preliminary assessment of whether an expert’s scientific testimony is based on reasoning or methodology that is scientifically valid and can properly be applied to the facts at issue. Under this standard, the factors that may be considered in determining whether the methodology is valid are:

• theory or technique in question can be and has been tested,
• theory or technique in question is the standard of care in each practice, and
• the theory or technique in question is widely accepted among qualified experts.

In Frey, the court opined: “Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognised, and while the courts will go a long way in admitting experimental testimony deduced from a well-recognised scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.”

Not to discount the value of CBCT imaging or its ability to successfully satisfy the Frey or Daubert criteria, the absence of CBCT is not de facto evidence of lack of a standard of care imaging. Many patients present to their dentist with uncomplicated cases where traditional two-dimensional radiographic studies are appropriate and provide the dentist with standard of care imaging of the patient. For the more complicated cases, 3-D imaging may be employed to provide the dentist with superior anatomic evidence in treatment planning and diagnosis. Three-dimensional imaging with CBCT can also be used in uncomplicated cases, but it may not necessarily be considered as the standard of care for every case in 2014.

Expert Testimony

An expert is a person with sufficient minimal qualifications to render an opinion on the subject at hand. Not all experts are created equal, and in fact in three states (Iowa, South Dakota, and New Hampshire) an expert need only have a 20-year job history to offer an opinion. Experts are used by the courts to educate the judge and jury as to what constitutes normal minimal acceptable care of a patient in a given environment.

Expert testimony is by definition the opinion of one practitioner. It is an opinion based on fact, evidence, experience, and knowledge which the expert believes to be relevant, valid, and upheld in the scientific community.

When reviewing a case for suspected malpractice the expert examines many things, including but not limited on chart notes, radiographic studies, depositions, and professional correspondence. In the five years, the author has noticed a remarkable increase in the number of cases in which plaintiffs and defense attorneys, as well as experts, rely on pre- and post-procedure CBCT imaging studies to assist in proving malpractice or defending good practice. Post-treatment radiographic imaging to prove malpractice or support good practice is not new in radiology. In fact in the years preceding WWI, some of the highest malpractice claims were awarded in cases where post-treatment radiographs played a pivotal role.

Logic would dictate that if plaintiffs and defense counsel and experts are making CBCT part of their strategy, then CBCT must be not only prevalent but of significant value in the formation of an opinion by an expert (and used by the court when reviewing a case. CBCT can be seen as an additional and important element of medical negligence to help explain why the doctor did what he did or why an unfortunate outcome occurred. Additionally, CBCT provides powerful and easily understandable images for layperson jury.

Recognising the value that CBCT adds to a case does not necessarily indicate that CBCT is the standard of care in every case. The decision to obtain a CBCT study before the procedure is determined by the dentist based on his experience and knowledge of the case.

Literature Support

For any technology to be considered as a standard of care, a plethora of literature in support for the technology should exist. The literature should consider the risk and benefits of the technology preferred over other patient care, and guidelines and protocols for acceptable use.

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To assess the influence of CBCT in the dental literature, the author performed a PubMed literature search in October for the words cone beam CT, cone beam CT + dental, cone beam CT + dental implants, cone beam CT + orthodontics, cone beam CT + oral surgery, cone beam CT + endodontics in the search line. The results are in Table 1.

Evaluation of Table 1 data clearly shows a significant presence in the literature of articles pertaining to the use of CBCT in the various disciplines in dentistry. The vast majority of literature discovered pertains to addressing the use of CBCT in treatment planning and diagnosis of patients in dental implant therapy, oral and maxillofacial surgery, orthodontics, and endodontics. Articles on new applications of CBCT technology to patient care were also prevalent in the sample. Some articles addressed the risk and benefits of CBCT but none denounced CBCT as harmful to the patient or insignificant in treatment planning and diagnosis. Two similar PubMed reviews of the literature on CBCT were performed by authors Alamri et al (Applications of CBCT in dental practice: A review of the literature. Gen Dent 2012: 60(5): 390–400) and De Vos et al (Cone-beam computerized tomography (CBCT) imaging of the oral and maxillofacial region. Systematic review of the literature. Int J Oral Maxillofac Surg 2009;38:609–625).


Both of these exhaustive articles demonstrate the plethora of literature addressing CBCT and its application in the many disciplines of dentistry.

### Professional Guidelines

For a technology such as CBCT to become a standard of care in dentistry, guidelines for its use and application in patient care must be established by the organisational bodies of those disciplines that independently employ the technology to treat patients. In dentistry, the dental practitioners most involved in the use and application of CBCT in patient care include general dentists, oral and maxillofacial surgeons, endodontists, oral and maxillofacial radiologists, orthodontists, and periodontists.

The American Dental Association has over 180,000 licensed dentists representing approximately 75 per cent of dentists in the USA. The American Dental Association published an advisory statement article in its principal journal, The Journal of the American Dental Association, in August 2012. The article discusses the many positive aspects of CBCT, but stops short of calling CBCT a new standard of care. Rather, the ADA encourages the dentist to use CBCT “selectively, as an adjunct to conventional radiography”. The ADA further recognises the value and presence of CBCT by including CBCT-related courses at its annual meetings and continuing education courses during the year.

The American Association of Oral and Maxillofacial Surgery (AAOMS) has over 9,000 members representing approximately 95 per cent of oral and maxillofacial surgeons practising in the USA. Literature addressing the application of CBCT in oral and maxillofacial surgery has been around since 2007. The AAOMS has offered continuing education in the use and application of CBCT for patient care as far back as 2011. The AAOMS has worked with the IAC to develop guidelines and accreditation criteria for 3-D CBCT imaging. In a recent survey of OMS residency programmes, 87 per cent of programme directors acknowledged the use of CBCT in patient care by their residents.

The American Association of Endodontists (AAE) and the American Association of Oral and Maxillofacial Radiologists (AAOMR) have released a formal position paper on CBCT. This paper makes an important point, such as limiting the field of vision to minimise radiation exposure and increase resolution, careful patient selection in CBCT, and the responsibility of the clinician to interpret the entire image. The position paper goes on to declare “the use of CBCT in endodontics should be limited to the assessment and treatment of complex conditions”. The article then lists nine of these “complex conditions”. In summation, the position paper recognises the value of CBCT as valuable.
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an adjacent to 2-D images and “CBCT may provide dose savings over traditional panoramic images in complex cases”.

L iterature pertaining to the use of CBCT in endodontics first appeared in the Journal of Endodontics in 2003 at the American Association of Endodontists sponsor continuing education in endodontics related to CBCT on their website and the organisation devotes valuable time at its annual meeting. Most residencies (44 of 47) in endodontics provide CBCT for patient care.

L iterature pertaining to CBCT in dentistry dates back to 1998. The increased consideration to effort continuing education relating to CBCT on both its website, through CE events, and at its annual meeting. All seven ADA approved residencies in orthodontic and maxillofacial programs in the US incorporate CBCT in their dental implant education curriculum.

T he tremendous value of anatomic truth in complex orthodontic and maxillofacial deformities with cleft lip and palate, impacted teeth, and maxillofacial programs in the US incorporate CBCT in their dental implant education curriculum. Most residencies (44 of 47) in endodontics provide CBCT for patient care.

T he International Congress of Oral Implantologists (ICOI), the world’s largest dental implant organisation and provider of dental implant continuing education with an excess of 25,000 active members worldwide, published a report on CBCT in its journal Implant Dentistry in April of 2012. The report concluded that CBCT is useful and routine in its application in patient care, owning to the value of the technology. (98 per cent) have CBCT available for patient care for pre- and post-doctoral students. Forty-seven (47 per cent) of program directors (PDs) responded affirmatively when asked if CBCT is used in patient care by their residents. The authors also surveyed 502 PDs in US-based orthodontics and advanced education in general dentistry (AEGD) programs were surveyed regarding use of CBCT by their residents. Eighty-two programme directors responded to the survey, (98 per cent) of program directors (PDs) supported the use of CBCT in dental implant treatment planning parlance, 5-D evaluation of alveolar ridge topography, proximity to vital anatomic structures.

and fabrication of surgical guides. The technology that uses CBCT must be justified in each case and should only be considered at alternative where conventional radiographs may not provide diagnostic truth. Literature discussing the application of CBCT in implant dentistry is comprehensive and demonstrates the lion’s share of research in applying CBCT technology to dentistry. The vast majority of post-doctoral residencies involves in dental implant patient care and all private practitioners attended training courses in the US incorporate CBCT in their dental implant education curriculum. Many professional organisations in dentistry for general dentists and specialists have weighed in on providing recommendations, guidelines, CE programmes, and position papers are used by organisations to influence the practice of their discipline. As the practice of dentistry is a complex field influenced by many factors including, but not limited to, regulations, reimbursement by third party payers; the recommendations, guidelines, and position papers that comprise dentistry may not formally declare CBCT is the standard of care for every patient, but these organisations do recommend the influence CBCT is having on the profession.

E ducational Institutional Participation

F or a technology to be considered a standard of care, those in the profession must be educated about the potential benefits of using CBCT in their practice. The value of CBCT when screening for impacted teeth, and maxillofacial programs in the US incorporate CBCT in their dental implant education curriculum. Many professional organisations in dentistry for general dentists and specialists have weighed in on providing recommendations, guidelines, CE programmes, and position papers are used by organisations to influence the practice of their discipline. As the practice of dentistry is a complex field influenced by many factors including, but not limited to, regulations, reimbursement by third party payers; the recommendations, guidelines, and position papers that comprise dentistry may not formally declare CBCT is the standard of care for every patient, but these organisations do recommend the influence CBCT is having on the profession.

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The ageing process of implants degrades hydrophilicity. Can the features of an aged implant surface be fully restored by photo-functionalisation, and does the technology have any limits?

Not at all. A series of studies have indicated that photo-functionalisation is effective on any implant surface type tested whether acid-etched, dual acid-etched, oxidised, sand-blasted, nano-featured or machined surfaces.

While photo-functionalisation can restore implant properties to a degree similar to when it was manufactured, the revitalised implant surfaces degrade time-dependently in the same way as those of regular implants. Therefore, dental implants undergoing treatment with the device need to be placed immediately.

Has the technique been tested in vivo studies and, if so, what results have you found so far?

According to a number of preclinical studies, the strength of osseointegration can be increased three times by photo-functionalisation at the early healing stage. Photo-functionalisation makes implant and abutment surfaces bacteria-phobic. The bone-implant contact of photo-functionalised implants reached 98.2 per cent, compared with 50–55 per cent achieved with the control implants. Moreover, it has been found that photo-functionalisation increases the quality of marginal bone formation, as well as improves the outcome of guided bone regeneration, when applied to titanium mesh. Studies indicate that there are not only short-term benefits of photo-functionalisation. Reliability and predictability in function and aesthetics are expected to increase with time, providing clinicians with a new strategy for a better long-term prognosis for dental implants and reducing the risk of peri-implantitis.

You say that photo-functionalisation could become a standard procedure for dental implant therapy. When will that happen, in your opinion?

Dentists in Japan have been using photo-functionalisation for approximately three years. In Europe, premarketing of the photo-functionalisation device has recently started. I believe that other regions will catch up shortly and make this technology a global standard in implant dentistry.

A number of projects are also underway utilising photo-functionalisation in the field of general bone engineering and orthopaedic implants and reconstruction.

Thank you very much for the interview.
Forensic odontology is an integral part of the medico-legal process. With this comes a responsibility borne by forensic odontology practitioners for the requisite education, qualifications and ongoing training. Courts and legal institutions now require that we have evidence-based research upon which we can rest our findings and conclusions. In addition to knowledge of the law, we have to have knowledge of human anatomy and its relationship to injury patterns and interpretation. Knowledge of bite mark patterns due to assault, trauma and sexual abuse, as well as child abuse injury manifestations, is also required, as is knowledge of assessment techniques used when the age of an individual is unknown. Finally, there is a need to have knowledge of human identification methods, principles and practices, as well as mass disaster identification procedures and protocols, and the ethical issues involved in the examination and management of dead bodies, and to have an understanding of human rights issues involved in war crimes investigations.

All of these require thorough knowledge of cranio-facial anatomy, dental anatomy, dental and skeletal development, injury interpretation and medicolegal report writing. It is also important to have a good understanding of the law relating to the practice of dentistry, the coronial system, and the criminal justice system. As the majority of the forensic odontology caseload concerns the identification of unknown deceased individuals, most discussion in this article will concentrate on this.

Honouring the dead is a fundamental precept in all societies. The extent of this communal attention to the deceased varies across the world, but in essence everyone hopes that his or her remains will be treated with respect after death. This respect for the dead includes, for many societies, robust identification of the deceased so that relatives and friends are able to treat the remains with appropriate ceremony and are able to visit the deceased, is enshrined in the laws of the land.”

In fact, the importance of identification of the deceased is enshrined in the Victorian Coroners Act 2008 (section 67), which states “A coroner investigating a death must find, if possible, the identity of the deceased, the cause of death, and the circumstances in which in which the death occurred.”

Hal Halleenstein, the Victorian State Coroner from 1986 to 1994, had firm views concerning the importance of human identification, articulated in the following quotation: “It is a hallmark of our civilisation that we regard it as an affront, an indignity, an abrogation of our responsibilities, that a person could live amongst us, die and be buried without a name.”

Of all the scientific methods, molecular biology is the only method that can mathematically quantify the degree of certainty for a particular match, with the other methods (including odontology) being somewhat dependant on more subjective method-ology and expert opinion. This reliance on even a small level of subjectivity can raise issues in courts when lay people do not have a deep understanding of the methods employed in an expert’s conclusion.

Confusion can arise from the fact that there is often no unanimous indication regarding which and how many characteristics are necessary in order to achieve a positive identification. The occurrence of several concordant features excludes identity; the occurrence of several discordant features commonly observed within the population does not allow a final judgment on identification, whereas even a few features rarely observed can lead to a positive match. An example of this is a case in which the written dental chart describes amalgam restorations in each first molar.

The same is found in the deceased, is this sufficient evidence to confirm identity? Definitely not, as many people share this restoration pattern. If, however, we also have ante-mortem radiographs of those restorations displaying the exact shape, size and location within each tooth, and these compare favourably with the post-mortem radiographs, then few would argue that a positive match cannot be confirmed. There is, however, still no way to quantify this match, to put a probability ratio or a percentage certainty to it.

It may be necessary in some cases to compare all of the teeth in a mouth in order to arrive at a match. In other cases, a single tooth with an unusual or complex restoration may be sufficient. It has long been the wish of identification experts to be able to quantify such matches, but no reliable method has yet
A deceased person has lost all facial expression, animation, and context and simply looks different from when he or she was alive. Inquirers decompo-
sition changes may also be present and go unrecognised. Couple this with the stress and trauma being experienced by the identifier, who may well have never seen a dead body before, and it is easy to see how someone may make a mistake. This is compounded by the way visual identifications are often performed, in that the deceased is presented to the identifier to confirm what the authorities remain as a major method for confirming what the authorities believe they know.

Identification methods

The process of visual recogni-
tion is complex and until quite recently not well understood. Clerc as to the identity of an indi-
vidual, either living or deceased, relies with the physical structure of the face, but also with the variety of facial expressions, the individual's angulations. This has been shown to be true in many studies concerning the recognition of living people via CCTV security footage. Why then are there doc-
umented cases of misidenti-
fication, the only real option for the authorities of the deceased, even of intact intact of the deceased, even of intact instances may also be challenging. In order to make a comparison, the forensic dentist not only implement bears unique charac-
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DNA profiles are encrypted sets of numbers that reflect a person's DNA make-up, which can also be used as the person's identifier. Although 99.9 percent of human DNA sequences are the same in every person, enough of the DNA is different to distinguish one individual from another, unless they are monozygotic twins. DNA profil-
ing system operating under thresh-
hold-sounding rules, determining whether two friction ridge im-
pressions are likely to have origi-
nated from the same finger or palm (or toe or sole). The validity of forensic fingerprint evidence has been challenged by academ-
ists, judges and the media. While fingerprint identification was an improvement on earlier anthrop-
ometric systems, the subjective nature of matching (especially when incomplete latent prints are used), despite a very low er-
rage, has introduced an ele-
ment of controversy.

Medical record comparison can be used for identification purposes when there is sufficient ante-mortem evidence of unique medical intervention or disease. Examples include the discovery of a medical prosthesis, such as a pacemaker and prosthetic hips, which will have engraved on them serial numbers, which can

Dental identification is not only achieved by comparing restoration; other features of the teeth and maxillofacial ske-
leton may also be employed. Root morphology, sinus configura-
tion, unusual crown shape, and pulp chamber morphology are all factors that can be considered in the absence of restoration, as long as there are high-quality ante-mortem images with which to make a comparison. Study models, sport mouth guards, partial dentures, orthodontic appli-
cances and photographs of the dentition are all useful aids for a forensic odontologist and are

Employed with varying degrees of certainty, depending on the circumstances of the case.

Personal identification via dental record comparison is similar to fingerprint analysis in that there is an element of subjectivity in-
volved in the matching process. Where dental record identifi-
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Dental identification is not only achieved by comparing restoration; other features of the teeth and maxillofacial ske-
leton may also be employed. Root morphology, sinus configura-
tion, unusual crown shape, and pulp chamber morphology are all factors that can be considered in the absence of restoration, as long as there are high-quality ante-mortem images with which to make a comparison. Study models, sport mouth guards, partial dentures, orthodontic appli-
cances and photographs of the dentition are all useful aids for a forensic odontologist and are

Employed with varying degrees of certainty, depending on the circumstances of the case.

Personal identification via dental record comparison is similar to fingerprint analysis in that there is an element of subjectivity in-
volved in the matching process. Where dental record identifi-
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able in its development. It has been recognized recently, however, that published standards for tooth development may not be as accurate as assumed, owing to the fact that they were constructed many decades ago and in other parts of the world, and therefore may bear little resemblance to modern populations. Considerable work is currently underway to address this issue, with new population datasets being established around the world.

Odontologists are also researching the ability to estimate more accurately the age of older individuals, around the adult/child demarcation age of 18 years. This is being achieved through the use of multifactorial approaches, where the third molar and various other skeletal development sites are assessed together in order to arrive at an estimate (Fig. 1a-c). This is seen as important research in light of the increasing need to determine the legal status of individuals such as asylum seekers, accused human traffickers who may be children and at risk being incarcerated in an adult prison, child soldiers, and victims of sexual assault in developing countries, all of whom are unlikely to possess proof of age documentation.

It has been shown that more than half of all cases of child abuse involve craniofacial injuries, perhaps owing in part to the significance of the face and mouth in communication and nutrition. Forensic odontologists are rarely involved in these difficult cases, but despite this play an important role in injury description and providing help with determination of causation. All of the principles involved in craniofacial trauma analysis for adults are applicable here, but with emphasis on the developing anatomy and different biomechanical characteristics of the child facial skeleton.

Dental malpractice and insurance fraud investigations are increasing, partly owing to greater public awareness of what constitutes a dentist’s duty of care and responsibility to patients, and partly owing to our increasingly litigious society. For this aspect of practice, the odontologist requires thorough knowledge of the various pieces of legislation relating to dental practice, the professional codes of conduct, and the latest information on treatment modalities, as well as good medicolegal report writing skills.

**Conclusion**

Forensic odontology is capable of providing rapid and relatively cost-effective identification of the deceased, as long as reasonable ante-mortem dental records are available. In countries such as Australia, the laws concerning medical record-keeping ensure that dental records are, in the main, of good quality and easily retrieved in the event they are required.

In other countries, this may not be the case, and identification of the deceased in some parts of the world represents a serious and ongoing issue for governments and humanitarian organizations. Good record-keeping is not only benefit of forensic practitioners, but also relevant to the work of odontologists. Identification is an important tool for determining outcomes for patients in general, in part, part of the work of odontologists in less developed parts of the world to encourage good record-keeping. The benefit of good record-keeping can be seen in recent mass fatality incidents, such as the Victorian Black Saturday bushfires, where, despite the availability of a well-resourced DNA capability, more than half of all victims were identified by dental record comparison.

The scope of forensic odontology is broader than identification alone and encompasses a range of activities, anything in fact where the practice and theory of dentistry intersect the law. To be a competent practitioner in this discipline requires not only a comprehensive understanding of odontology theory and technique, but also a degree of knowledge and experience in a variety of forensic fields, including law, pathology, clinical forensic medicine, molecular biology and anthropology. The forensic odontologist encounters all of these disciplines in different case scenarios, and in order to understand how the odontologist can contribute best to an investigation he or she needs to comprehend the capabilities and limitations of these fields.

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**Contact Info**

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