

History of the Dental Hand Instruments

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Abstract The dental probe (explorer) appears in the work of the French surgeon, Garengéot. In 1727 in his second edition on dental and surgical instruments: *Nouveau traité des instrumens de chirurgie les plus utiles et de plusieurs nouvelles machines propres pour les maladies des os*, for the first time we see a dental probe (sonde) depicted

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In the annals of dentistry, restoring teeth was a relatively late addition. Solutions to address dental pain appeared in ancient Roman works. The first systematic approach to using instruments dedicated to tooth restoration occurs in the 8-9th century Arab texts. The first instruments were sharp **cauterization tools** used to scrape the bottom of a large cavity or cauterize a painful tooth, killing the nerve. Arab physicians even developed a funnel to protect burning the soft tissue while cauterizing the tooth.

These early instruments were primarily for removal or stopping caries progress, but not necessarily filling the cavity. Only during the 16th century did we see tools to plug a tooth. The primary texts of the 16th century were from barber-surgeons. Still, most of the instruments displayed in the work of Ambroise Paré, or Scultetus, were forceps, pelicans, and elevators, surgical in nature.

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The carious substance was removed with instruments borrowed from other professions: a chisel, knife, file, or a sharp scraper. Goldsmiths of the 17th century used small scrapers (Badcock). Adjusting them to fit the opening of a typical tooth was done intuitively, and the process was named interchangeably as scraping, excavating, scooping, or cutting. Scraping the bottom of a carious lesion was recommended as early as 1530 when Zene Artzney, the first book entirely dedicated to dentistry, was published. Subsequent books published in the 16th century by Francisco Martinez de Castrillo included sharp instruments and an early

form of an **excavator** to scrape the cavity. Pare (Pare) recommends cauterization with a small, flat, hot instrument, much like the 9th-century Arab physicians recommended, but spent little time reshaping the cavity or restoring it.

Instruments to remove caries gained importance and variety as dentistry entered a restorative phase at the beginning of the 18th century. Pierre Fauchard depicts four different scrapers/excavators in his 1728 seminal book (Fauchard).

In 1841, Pierre Joachim Lefoulon, a French dentist, described excavators (curette) and hand drills for removing caries in the absence of a reliable drill to remove soft dentin. He recommended tin, gold, or platinum sheets packed into the cavity using special pluggers, and when completed, he burnished their edge.

In the 19th and early 20th centuries, several turning points in developing restorative instruments are important. The first was the move from handcrafted, ivory, or metal-made individualized instruments to commercially available mass-marketed stainless-steel instruments. This switch occurred toward the middle of the 19th century with the establishment of dental suppliers such as S.S. White in Philadelphia (1844) and Ash and Sons in London (1820). As demand for services increased, so did the available range of hand instruments for excavation, shaping, and restoring cavities. These included an ever-growing array of instruments such as **probes, scrapers, enamel cutters, chisels, excavators, stoppers, pluggers, and burnishers**. Handsets of over 150 instruments were not uncommon.

The next major shift in instrument design came at the end of the 19th century when the microbial nature of diseases urged the sterilization of dental instruments. This required instruments that could withstand chemical and thermal exposure during sterilization.

Finally, with the appearance of dental schools and dental education in the second half of the 19th century, clinical practice entered a more formal process of developing, categorizing, standardizing, and streamlining the number and types of instruments used for restorative dentistry. This culminated with the publication in 1908 of G.W. Black's two-volume *Operative Dentistry* text (Black). Black's methods defined restorative and operative dentistry for a century.

Today's array of instruments is extremely diverse and highly specialized. However, as dentistry moves toward less invasive interventions and more digitized approaches, many instruments are less used.



The depiction of the dental probe in Garengot's 1727 work.

Reference

1. Badcock, William (1677). *A touchstone for gold and silverwares or A manual for goldsmiths*. John Bellinger, London. p. 1.
2. Black, Greene Vardiman (1908). *A Work on Operative Dentistry*, Chicago, Vol 2. p.105-210.
3. Fauchard, Pierre (1728) (a). *Le Chirurgien Dentist*. 1st Ed., Vol II., p.65, Figure (Planche) XIV.
4. Garengot, Croissant de R. (1727). *Nouveau traité des instrumens de chirurgie les plus utiles: et de plusieurs nouvelles machines propres pour les maladies des os. Dans lequel on examine leurs parties, leurs usages, & on fait sentir la vraie maniere de s'en servir : ouvrage très-nécessaire aux chirurgiens, [et] très-utile pour les couteliers*. France: chez Guillaume Cavelier, 2d Edition, Vol. II. Paris, p.42. (The first time a dental probe ("sonde") is depicted, TII. 42.
5. Paré, Ambroise (1652). *Les Oeuvres d'Ambroise Paré.*, (On cauterization, page 395D.

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