Dental treatment and related vocabulary in Late Medieval England

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The importance of the late medieval period in the shaping of English medical vocabulary is widely recognized. From circa 1375 onwards, the English language increasingly emerged from the shadow of Latin and French as the language of medical writing. Many of the terms used by the translators and authors of these works appear in an English-language text for the first time. This article first outlines what Late Middle English and pre-1550 Early Modern English medical works tell us about contemporary practitioners dealing with dental troubles. The causes to which such conditions were attributed and the methods of treatment applied are also discussed. The lexical analysis that follows addresses the vocabulary for teeth, sicknesses of teeth, medicinal preparations, and instruments. In each area, equivalent terms are frequent, the same concept carrying a variety of names. The English terms are often direct translations from Latin or French. The translators occasionally confuse similar words in the source language. Many of the terms reflect medieval theories about the causation of dental conditions.

Keywords: dental vocabulary, Middle English, Early Modern English, translation strategies

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1. Introduction

Toothache can be an agonizing condition, difficult or impossible to alleviate without proper treatment of the underlying cause. The medieval surgeon Guy de Chauliac (1300?–1368?) well knew the pain that dental troubles inflicted upon his patients when he stated that "[i]t is schewed þat among þe passiouns of all þe body of þe whiche a man is ful litel ioyed, þe toþe akþe is most grevous" (Ogden 1971: 484; *schewed* 'shown'). In churches, carvings dating from the Middle Ages show people whose jaws have been bandaged, most likely in an attempt to mitigate tooth pain (Kelly 2009: 49). Without anesthetics, x-rays, antibiotics, and many other relatively recent developments in medicine and dentistry, most of the patients must have faced a veritable ordeal. Contemporary medical works prescribe a whole variety of medicinal preparations against toothache, but the characterization "this is harde for to thole" accompanying one remedy (Ogden 1969: 17; *thole* 'tolerate') rather reminds one of the saying "desperate diseases must have desperate remedies".

In medieval England, as during the Roman occupation of Britain, the regular consumption of coarse stone-ground bread had an abrasive effect on teeth, the skeletons excavated at some Roman burial sites showing badly worn-down teeth (Jackson 1988: 120; Cruse 2004: 182; Kelly 2009: 49). The poor level of oral hygiene also contributed to dental problems. The plentiful advice given in medieval "regimens of health" on how to take care of teeth and gums went largely unheeded, as did the pleas made by many medical authors (Demaitre 2013: 192). Not all things were worse than now, however. Sugar intake was less, with the result that tooth decay or caries was a rarer phenomenon, especially before the introduction of sugar into Europe by soldiers returning from the Crusades (Jackson 1988: 120; Cruse 2004: 182).

The present article surveys the discussions of teeth and their ailments in Late Middle English and Early Modern English medical manuscripts and books. More particularly, the period investigated ranges from circa 1375 to 1550. From about 1375 onwards, extensive English-language medical writings started to appear after a long dominance of Latin and French. As for the terminal date of the study, medical books printed before 1550 mostly reproduce material that was available as manuscripts in the earlier centuries, there being an upsurge in original material in the second half of the sixteenth century (Norri 1992: 53–55). The medical works analysed represent the main categories of Middle English medical writing first systematically distinguished

by Voigts (1982), that is, academic treatises, surgical manuals,[1] and remedy-books. The tripartite classification is supported by linguistic evidence, as the medical writings in the three groups differ from each other with respect to lexical, grammatical, and stylistic features (Pahta & Taavitsainen 2004: 14). Besides observing what the Middle English and Early Modern English treatises examined can tell us about dental practitioners, theory, and treatment, the article also contains a brief outline of the contemporary terminology employed for teeth, their troubles, and ways of treating them.

2. Medieval practitioners treating dental conditions

Instructions for preparing medicines against toothache are found in each of the three varieties of medical writing examined. Physicians, surgeons, and various empirics took an interest in creating pastes, plasters, fumigations, and other forms of medication, to ease the plight of the patients. The late fifteenth-century banns (public proclamations) advertising the services of an unidentified itinerant doctor state that "he wil curyn ye toy3thhache & helpyn ye pacyent be ye grace of god" (Voigts 2011: 265). More radical forms of treatment such as tooth extraction, cauterization, and bloodletting, were mostly practised by surgeons and barber-surgeons. Rawcliffe (1995: 125) cites a text from 1519 that lists "drawyng of tethe" among procedures "which restyth onely in manuall operacon, princypally with the handes of the werkman". Such manual skills were usually not taught in universities, where future physicians were expected to "speculate on the causes of illness, erect medical systems, and heal and cure the sick" (Bullough 1966: 109). In medieval times, neither Oxford nor Cambridge had surgery as part of their curricula. Instead, aspiring surgeons and barber-surgeons were trained through apprenticeship to an experienced practitioner. In England, the period of apprenticeship in the fourteenth and fifteenth centuries varied from five or six years to as many as twelve, the sons of master surgeons probably gaining their freedom sooner than other apprentices (Bullough 1959: 450–451; Ussery 1971: 12). Besides qualified practitioners, procedures like tooth extraction were also carried out by empirics, especially in rural areas and among poor people. Henry IV is

1 Often called just *surgeries* in studies of medieval medicine.

known to have awarded a pension to a Matthew Flynt, "tothdrawer" from London, for providing the poor with free dental care (Rawcliffe 1995: 144).

In Middle English and Early Modern English medical writings from the period 1375–1550, one is hard-pressed to find any references to the practitioners engaged in treating dental troubles. In the works studied, the above-mentioned Guy de Chauliac provides the most detailed description of the division of labour between the various groups of healers:

1 The firste lore is þat þise operaciouns or wirchynges ben particuler and moste approprede to barboures and to tothe drawers, and þerfore leches haue lefte þe forsaide werk to ham. It is siker forsoþe þat suche wirchers be dressede or gouernede by leches.

The secounde lore is þat it byhoueþ a leche counseilynge in suche þinges þat he knowe þe helpes of tieth. (Ogden 1971: 485; *lore* 'teaching', *wirchynges* 'procedures', *moste* 'especially', *approprede* 'appropriate, proper', *siker* 'safe', *wirchers* 'practitioners', *dressede* 'guided, directed')

Guy de Chauliac, considered one of the most eminent surgeons of the entire Middle Ages, would typically not undertake tooth extraction himself. Instead, the most dramatic and ultimate form of treatment would be left to barbers and tooth-drawers, who needed to be supervised by "leeches", that is, physicians or surgeons (*Middle English Dictionary*[2] s.v. *leche* n.3, sense 1a). Procedures like blood-letting, cupping, purging, and cauterization, used against toothache like many other troubles, were carried out by both surgeons and barber-surgeons. The latter also had a role in preventive care and maintenance of dental hygiene, as appears from the following passage in Roesslin (1545: f. 147v):

2 To kepe and preserue the teathe cleane. Fyrst yf they be very yelow and fylthy or blackisshe, let a barbar skowre, rubbe & pyke them cleane and whyte.

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2 Hans Kurath *et al.* eds. Hereafter *MED*. In the passage cited, *leche* translates the Latin word *medicus* (McVaugh 1997: 356).

3. Theories about dental conditions

The theoretical foundation of medieval medicine lay in the doctrine of the four humours going back to ancient Greek medical authors. The human body was thought to consist of blood, phlegm, bile (also called choler), and black bile (or melancholy). The proportions of these bodily fluids determined a person's physical and psychological disposition, as seen from the adjectives *sanguine*, *phlegmatic*, *choleric*, and *melancholy*, still used of mental traits (Siraisi 1990: 104–106). Sickness resulted from an imbalance of the humours, or from them becoming unstable or putrid. The following passages in the medical treatises studied illustrate the application of humoral theory to dental problems, in particular toothache and caries:

3 Sumtyme a mannes teeþ ben frete & ben holow, & þis comeþ of humours corrupt þat falliþ to þe teeþ. (Fleischhacker 1894: 265)

4 If the reume do destill into the cheekes and teeth, I haue proued that the iuice of ground iuy, and that herbe whiche we call mouse eare, taken within a quyll into the nosethrilles, oftentymes purgeth excedingely the reume and taketh away the ache of the teethe. (Elyot 1541: f. Y4r; *reume* 'watery bodily humour thought to drain from brain')

5 For the toth ake. The Causes. The synowes being very hote or cold or great quantity of humors, fallynge from the head to the gummes. (John XXI 1550?: f. F8v)

Rheum or corrupt humours distilling from the brain and trickling downwards was thus regarded as a common reason for aching or decaying teeth. But the source of trouble could also be located in the stomach. Demaitre (2013: 193) observes that toothache was attributed to "humors from the brain or vapors from the stomach". Both causes are mentioned in many of the works examined, among them the following two:

6 In a mannes teeþ ben diuerse greuauncis: ache, wormes, stynking, rotenes. Ache comeþ in diuerse maneris: Oþerwhilis, it comeþ of þe hede and of þe humour of þe heed þat falleþ doun into þe teeþ, and þan comenli þe ouer-teeþ aken. Oþerwhilis, it comeþ of þe stomake, and þen þe neþir teeþ ake. (Getz 1991: 91–92; *oþerwhilis* 'sometimes')

7 Tooþache comeþ somtyme of þe vice of þe stomake, somtyme of þe vice of þe brayne, whanne colde humours oþir hote rewmatik infectiþ þe synewis of þe teeþ and brediþ ache; of vice of þe stomake whanne it comeþ of hote humoures þat beþ in þe stomake and fumosite þerof resolueþ and todeliþ, and comeþ vpward, and bitiþ, and prickeþ, and greueþ þe synewis and rootes of þe teeþ, and brediþ þerinne ache and stenche also. (Seymour 1975: 370; *vice* 'sickness', *todeliþ* 'spreads')

Since ancient Egyptian medicine, dental pain and decay had also been attributed to worms infesting teeth and gums, a belief that lasted into the eighteenth century (Jackson 1988: 15–16; Cruse 2004: 183; Kelly 2009: 49). Cameron (1993: 12) cites an Old English passage in which the worms are said to fall from the teeth when subjected to therapeutic smoke, seen if a black sheet is placed below the mouth.[3] In his discussion of dental ailments, Andrew Boorde (1547: f. M1r) compares the size of a dental worm and an itch-mite infesting hands: "The worme is lytle greatter than ye worme in a mans hande". Humoral theory and the concept of the worm are sometimes combined in Middle English medical writings, as appears from Bernard of Gordon's statement that "humours falleþ to þe teeþ & rotiþ & takiþ hete & in þat manere þey may engendre wormys" in Bodleian Library, Ashmole manuscript[4] 1505, f. 128v. The same idea of harmful humours generating worms is presented by both Bartholomæus Anglicus and Gilbertus Anglicus:

8 Wormes brediþ in þe cheke teeþ of rotid humours þat beþ in þe holouȝnes þerof. (Seymour 1975: 371)

9 Oþerwhilis, þe ache comeþ of corrup humours þat ben at þe rote of þe teeþ...If it comeþ of a keen humour amonge þe teeþ, it makeþ wormes in þe teeþ, eiþir it makeþ þe teeþ holewe. (Getz 1991: 91; *oþerwhilis* 'sometimes', *keen* 'sharp')

Certain foods were considered bad for one's teeth. The list of nutriments to avoid was sometimes quite long, as seen from the passages below.

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3 Some recipes mention worms falling into a dish of water held by the patient (Boorde 1547: f. M1r; Heinrich 1896: 212; Ogden 1969: 19).

4 Hereafter MS.

10 Vndirstonde þese ben þo þyngges þat wiche noyn þe teeþ: rotunhede of metis & of drynkes & ofte to be dronkun, salte fische, ofte to spewe, hony, mylke cruddus, datis, ficus, lekys, quiksyluere in what maner it be vsid, ceruse, vynegre, al maner sowre þyngges be þe froytis or oþer. (Cambridge, Gonville, & Caius MS 176/97, p. 206; *noyn* 'hurt', *metis* 'foods', *spewe* 'vomit', *cruddus* 'curds')

11 Meates whiche do hurte the tethe. Very hotte meates. Nuttes. Swete metes & drinkes. Radyshe rootes. Harde meates. Mylke. Bytter meates. Moche vomyte. Leekes. Fyshe fatte. Lymones. Colewortes. (Elyot 1541: f. D2v; *meates* 'foods')

12 This payne ... may come by drynkynge of hote wynes, eatynge of hoote spyces, or eatynge of hote aples, peares, and such lyke. (Boorde 1547: f. L4v)

It is interesting to note that the compiler of the treatise in the Gonville and Caius MS mentions quicksilver or mercury as a substance that is harmful for teeth. Since the 1830s (Porter 1996: 376), amalgam fillings containing mercury were widely used in dental practice, to be largely abandoned in recent decades after the potential health hazards of such fillings came to light. Medieval writers also state that frequent vomiting and consumption of sour fruits may jeopardize one's teeth, a view shared by modern dentists.[5] The order in which the foods were eaten was a further consideration. It was thought inadvisable to "ete cold mete after ryght hote or hoot after cold" (Dawson 1934: 26).[6]

Looseness of teeth, a common complication of periodontal disease, is another dental ailment mentioned in the works studied. The condition was attributed to flaccidness of the adjacent structures, as seen from the heading "How þe teþ buþ made meuable of feblenesse and loosyng of þe senewes" in an English version of Theodoric of Cervia's surgical manual (Cambridge, Magdalene College, Pepys Library MS 1661, p. 186).

In medieval medical writings, bad breath is associated with disturbances in a variety of different body parts, including teeth and gums, brain, stomach,

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5 https://www.cosmeticdentistinbrisbane.com.au/2020/09/22/does-vomiting-cause-dental-problems/, https://hancockvillagedental.com/foods-that-irritate-your-teeth/.

6 "A sodeyn changing fro hote metis to colde" is one of the causes of toothache listed by Gilbertus Anglicus (Getz 1991: 91).

and lungs (Demaitre 2013: 192). That dental cavities may cause halitosis is recognized in some of the Middle English and Early Modern English treatises examined, among them the works by Bartholomæus Anglicus and Eucharius Roesslin:

13 Stenche of mouþe comeþ somtyme of corrupcioun of þe teeþ and of þe gomes. (Seymour 1975: 369)

14 Of stynkynge breth...If yt be engendryd in the mouth onlye, then most comunely it cummyth of sum rotten & corrupted holowe teth, whiche in this case must be plucked out. (Roesslin 1545: f. 148r)

It was sometimes thought possible to predict the outcome of a disease from the patient's teeth. In his discussion of a feverish patient, Bernard of Gordon tells his readers that "ȝiff hys teeþ be drye as it were tre, þat is euel signe & mortel" (Bodleian Library, Ashmole MS 1505, f. 127v).

4. Treatment of dental conditions

Medieval attempts to cure toothache and other dental afflictions were largely based on humoral theory (Kelly 2009: 49; Demaitre 2013: 192). The four humours were in various proportions associated with the four qualities of hot, cold, moist, and dry. If the causative humour was dominated by the hot quality, the medicinal preparation would primarily consist of ingredients regarded as cold. The effects of a moist humour were counterbalanced with dry medicines. Bloodletting, cupping, and purging were common procedures for evacuating excessive or troubled humours. The basic tenets of humoral theory and their importance for diagnosis and treatment can be seen in the following and many other passages in Middle English and Early Modern English medical writings:

15 If it [toothache] come of vicis of þe heed or of þe gomis, and þe cause come of hete, þat þou miȝt knowe bi reednes of þe place & bi þe hete þerof, & þan þou schalt lete him blood in þe heed veine, & þan þou schalt lete him blood in þe veine þat is vndir his tunge...If þe akynge come of coold humouris, þat þou miȝt knowe if þe place be not reed ne to-swollen, þan purge hi wiþ cochijs or wiþ pigra. (Fleischhacker

1894: 264; *vicis* ‘flaws’, *heed veine* ‘cephalic vein’, *cochijs*: ‘pills or boluses for purging excess bodily humours, esp. from the head’, *pigra* ‘purgative based on aloes’)

16 Oþerwhilis, þe ache comeþ of corrup humours þat ben at þe rote of þe teeþ. And if it comeþ of hete of þe heed, þe chekes ben to-swollen, and reed, and hoot. In ache þat comeþ of cold, þer is palenes of þe cheke and colde of þe teeþ. And if it comeþ of moistnes, þer is swelling and softenes of þe cheke, and if it comeþ of drines, þer is hardenes and litil swelling with þe ache. (Getz 1991: 92; *oþerwhilis* ‘sometimes’)

17 Fyrst purge the heed with pilles of cochie. And vse gargaryces. And yf it do come of any colde cause, chewe in the mouth diuers tymes the roote of horehounde (Boorde 1547: f. M1r; *pilles of cochie:* see *cochijs* in (15), *gargaryces* ‘gargles’)

Fumigations, as mentioned earlier, were used to expel the supposed worms in the teeth. In many recipes, seeds of henbane (*Hyoscyamus niger*) are placed on glowing coals or stones, the patient inhaling the smoke through a pipe.[7] Grieve (1982: 403) comments on the treatment still practised in some parts of Britain in the early twentieth century. She notes that fumes from henbane seeds are “dangerous, having caused convulsions and even insanity in some instances”. Medieval physicians and surgeons were aware of such hazards, as appears from the warning “be-ware þat þu drawe nott thyn ande for strikynge of þe sauoire of þe sedis in-to thi throtte” in one remedybook (Ogden 1969: 19; *ande* ‘breath’).[8] Notes of caution also accompany the use of other poisonous plants in dental care, among them hellebore.[9] Platearius warns against ingesting the juice from the plant, stating that “it is to dreden þe þe iouce of ellebori come not within þe cause þat it woll dissolue þe membris,

7 A picture of such treatment appears in a thirteenth-century Anglo-Norman translation of Roger of Parma’s *Surgery* (Hunt 1992: 72–73).

8 The writings of Dioscorides, Celsus, and Pliny show that henbane was used to alleviate toothache in ancient Greece and Rome already. Like some medieval authors, Scribonius Largus believed that vapour from henbane seeds would expel the worms responsible for tooth decay (Jackson 1988: 121).

9 Hunt (1989: 106) identifies Medieval Latin *elleborus* in lists of plant-name synonyms with white hellebore (*Veratrum album*), black hellebore (*Helleborus niger*), and bear’s-foot (*Helleborus foetidus*), all poisonous.

for why it is venemous & dystourblyng" (Cambridge, University Library MS Dd.10.44, f. 33r).

Some of the substances prescribed in the preparations against toothache and other dental troubles are prime examples of what has been termed the *Dreckapotheke*, "the use of remedies that are considered filthy, dirty or disgusting", with "excrement, urine, and any kind of dirt" as the basic ingredients (Maurer 2017: 1248). It is no wonder that sometimes the physician or healer was told not to reveal the true composition of the medicine to the patient, as in the first extract below.

18 ffor akyng of the holow toth. take a ravennys tord and put it in the holow toth and coloure hitt w^{t} the juse of peletre of Spayne that þe syke knaw it not ne wote not what it be (Dawson 1934: 24; *peletre of Spayne* 'pellitory of Spain, *Anacyclus Pyrethrum*', *wote* 'know')

19 Þe skyn of a serpent may be goode in þis cause, and ȝitt serpentys biþ venymous. I sey þat venymous bestis ne kepiþ noȝt here venym in þe skyn in þe superfluytees, as it schewyþ in þe torde of a grene euete þat is goode in þis caas. (Bodleian Library, Ashmole MS 1505, ff. 128v–129r; *superfluytees* 'body parts thought to develop from excess humours or fumes', *euete* 'newt')

20 Forto make yonge childrens tethe to growe hastely. Sethe hares braynes and anoynte therwith the gomes. (Cambridge, Trinity College MS O.8.35, f. 28r)

21 If the hollow toth be filled wyth crowes doung it breaketh the tothe and taketh awaye the payne. (John XXI 1550?: f. G3r)

In many of the recipes against toothache, the medicinal preparation is to be put in the ear or nostril rather than on the tooth, probably in an attempt to hold the medicine in place and thereby prolong the period of its effectiveness:

22 Item primerose put in thyn nose be þe hole syde abatyth peyne. (Schöffler 1919: 201)

23 Stamp garlec wiþ pepir and do þe iuse in þe ere of þe toþer side and it shalle helþ. (British Library,[10] Additional MS 34111, f. 123v)

10 Hereafter BL.

24 For þe towyth ache. Recipe þe ius of dayseys leuys & stampe them & weyt cotun ther in & put it in þe nose & draw your breyt yenward. (Bodleian Library, Ashmole MS 1389, p. 80)

Many different substances obtained from plants and animals, as seen from the recipes quoted, were used in the medicines against the agony of toothache. A badly damaged tooth could be destroyed or "broken" by filling the cavity with crow's dung, or by touching it with the root of water crowfoot, *Ranunculus aquatilis* (John XXI 1550?: f. G2v). A passage titled "Ad trahendum dentem sine dolore" in Bodleian Library, Ashmole MS 1389, p. 23, informs the reader that the root of mulberry tree soaked in vinegar, dried, and powdered draws out the sick tooth without any pain. The latter recipe, with the addition of "piretrum" (pellitory), is also found in a Middle English translation of Lanfrank's surgery, together with two other herbal preparations that help "to drawe out ony mannes tooþ wiþouten iren" (Fleischhacker 1894: 265).[11] Guy de Chauliac's opinion of such promises of painless tooth extraction is outright scathing:

25 Many medecynes forsoþe ben putte of olde men, þe whiche drawe out tieth or liȝtne ham to drawynge out wiþ yren, as, þe mylke of tytymalle with pylettre and with þe roote of mulbery and of capparys and wiþ arsenyk and putte in þe roote of þe toþe, or þe strong water or þe grece of frogges of þe wode and of trees. Neuerþelatter þay ȝeue many byhestes and fewe werkes forsoþe. (Ogden 1971: 490–491; *tytymalle* 'spurge', *pylettre* 'pellitory', *capparys* 'capers', *strong water* 'nitric acid or some other powerful solvent', *byhestes* 'promises')

When the dental condition failed to respond to medicines, the pros and cons of treatment with instruments would be considered. One possibility was to apply a red-hot cautery to the hole in the tooth. The surgeon Roger of Parma describes the procedure as follows:

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11 Another recipe "to plucke out a Toothe", from circa 1570, appears in the remedybook edited by Macgill (1990: f. 160v): "Take the braynes of an haire and seeth it in redd wyne, and therwth annoynte the tooth that you will haue out, and it will fall out wthout payne."

26 For the toth ache if it be causide of a false toth. Then take a smal iren crokyde at the ende and make it rede hote in the fire and make the pacient to gape. And sett the ende of the yren in the myddest of the hole of the toth & it is a souerayne medicyn. (BL Sloane MS 240, f. 14v)

John XXI (1550?: f. G6r) advises a form of cauterization that must have been difficult to put into practice: "Light a sharpe sticke of ashe and whyle it burneth put into the hollow toothe first filled with triacle." In order to prevent damage to the adjoining tissues, some medieval writers recommend that the cautery should be applied through a metal pipe. Cambridge, Gonville and Caius MS 176/97, p. 206, instructs the medical practitioner to "tak two longe yren nedlis or of copre & firy hem & ley hem to þe teeþ þat ackyth þorwe a pype of yren".[12] Instead of a metal instrument or *actual cautery*, a caustic substance or *potential cautery*[13] could be used. Kelly (2009: 50) mentions that medieval healers sometimes poured acid into the dental cavity to numb the ailing tooth (cf. "strong water" in (25)). Bernard of Gordon was well aware of the hazards involved in the application of potential as well as actual cauteries:

27 Make hym a cauterye wiþ arsenyk, vitriole & cantarides. Neuerþelattre þou most bewar in þese þinges þat no þynge ne passe in, for it wolde myche agreue. (Bodleian Library, Ashmole MS 1505, f. 128r; *cantarides* 'broken dried bodies of the blister beetle')

Tooth extraction was regarded as the ultimate remedy in dental troubles. Gilbertus Anglicus states that a tooth infested by worms must be pulled out if fumigation with henbane seeds fails to work (Getz 1991: 94). Roger of Parma would similarly resort to the procedure in severe cases of dental decay, noting that "ther is no medicyn so good for a roten toth as is pulling out þerof, for þat is most sekerest" (BL Sloane MS 240, f. 14v). Other writers were more sceptical, including Andrew Boorde, according to whom extracting one tooth may lead

12 Bernard of Gordon is another writer warning against harm to the nearby areas of the mouth: "In þe last make a cauterie in his tooþ wiþ a ȝerde of yre put in wiþ a canele for harmynge of placis þat biþ neiȝ" (Bodleian Library, Ashmole MS 1505, f. 128v; *ȝerde* 'stick', *canele* 'pipe').

13 *MED* s.v. *cauterie* n., sense 1a.

to a chain reaction: "beware of pullynge out any toth, for pull out one and pul out mo" (Boorde 1547: f. M1r). Platearius and Bernard of Gordon both allude to the possibility of the ache continuing or returning even after the procedure:

28 ȝyf þis medicyn & oþer forseid help nat, þan þe best cure is þis: for to craftly drawyn out þe teithe with all his roottys, for why & þer be leuyd ony rote þe whiche be nat drawe out, þan þe ake is worse þan before. (Cambridge, University Library MS Dd.10.44, f. 33v)

29 ȝiff þe akynge ne be noȝt acesyd hirwiþ vnrote hym. And þan þou most do þerto cautelys þat þou ne do awey noon but ȝif he be greuous oþer rotyd oþer yfrete, for þe akynge wole come aȝen þere þe tooþ was. Þerfor it is ful lytel helpe to drawe awey teeþ. (Bodleian Library, Ashmole MS 1505, f. 129v; *cautelys* 'cautions')

Platearius emphasizes the importance of carefully extracting all the roots of the rotten tooth. Modern dentists would agree with him in the matter, knowing that "leftover tooth fragments can cause dental infections and a myriad of other problems if they are not properly removed".[14]

Prosthetics have a long history in dentistry. The Etruscans, since the seventh century BCE, are known to have employed bridgework in which the substitute tooth or series of teeth was riveted to a band of gold with loops at each end. The loops were then used to attach the dental bridge to the healthy teeth at either side of the gap (Jackson 1988: 119–120; Cruse 2004: 184). Archeological evidence from Roman cemeteries reveals that artificial teeth were prepared from pebbles and wrought iron as early as the first or second century CE (Cruse, ibid.). In dental repairs, the favourite medium among the Romans was gold. Loosened teeth, for example, were tied to the adjacent firm teeth by gold wire, the patient's finances allowing (Jackson 1988: 120).

Kelly (2009: 50) notes that although both Egyptians and Romans had developed dental bridges and implants, "this did not seem to be popular during the Middle Ages". The medieval medical treatises studied for the present article, with hardly any references to artificial teeth, lend support to that view. Guy de Chauliac stands alone in his description of the techniques of treating "a tooth þat is movede and made feble". Such a tooth, in his opinion, should first

14 https://bestdentistinhouston.com/piece-of-tooth-left-after-dental-extraction/.

be fastened with a small gold chain. In the case of dental loss, the surgeon recommends preparing an artificial tooth from another person's tooth or from cow bone:

30 The whiche, if it helpe not, bynde ham with a softe smal cheyne of gold, as Albucasis techeþ. And if þai falle away, make hem of oþer menis teeþ or of a kowes bone, and bynde ham with a sleiȝte, and he may be serued with hem longe tyme. (Ogden 1971: 489; *sleiȝte* 'prudence')

Rather than with gold wire or chain, loose teeth are usually treated by applying various medicinal powders. The "pouder to conferme teþ þat ben lose" in Cambridge, Peterhouse MS 118, II, f. 106va, contains white coral, red coral, and mastic. The following are two more recipes for the ailment, the latter mentioning eating elecampane (*Inula helenium*) leaves as a potential remedy:

31 For teth þat stonden noȝt faste. Take hertis-hornys, and brenne hem, and do þe askys in a lynyn cloth, and leye it þer-to; and þei schull syttyn faste. (Müller 1929: 98)

32 To make a waggynge tethe fast. Take & eate the lewis of elena campana. (Bodleian Library, Ashmole MS 1405, f. 11v)

The lines of treatment so far presented could be supplemented or replaced by something very different. As Rawcliffe (1995: 95) states, charms thought to possess healing powers are found in medical works owned by laymen and professional healers alike. The medical manuscript compiled by Thomas Fayreford, a fifteenth-century medical practitioner well versed in academic medicine, contains some twenty charms, with tooth problems, childbirth, and epileptic seizures forming prominent concentrations (Jones 1998: 176). In the charms against dental troubles recorded by Fayreford, St Appollonia and St Nichasius are often invoked, and sometimes characters should be written on the patient's cheek (ibid.). St Appollonia also figures in the dental cures found in the remedybooks here examined. The story according to which she had her teeth removed and jaw broken by her torturers explains why she was thought sympathetic to those suffering from toothache

(Kelly 2009: 47). References to the saint's terrible fate appear in some of the charms, including the mentions that "Sancta Apolonia virgo fuit inclita, cuius pro Christi nomine dentes extracti fuerunt" (Müller 1929: 130), "tiranni eius dentes cum malleis ferreis fregerunt et in hoc tormonto orauit ad dominum" (Heinrich 1896: 148), and "beata appollonia martir & virgo amaram & horribilem dencium excussionem constanter sustinuit" (ibid., 221).[15]

Besides St Appollonia, other Christian figures make their appearance in passages dealing with dental afflictions. The "Carmen pro Dolore Dencium" in Heinrich (1896: 102–103) is based on the story of Jesus curing St Peter's toothache. A similar incident occurs between Jesus and St Abraham in another remedybook (Cambridge, Trinity College MS R.14.51, ff. 10r–10v):

33 A charme for tethe and þat a gode. Take vyne lefes and stampe hem wele and lay it to þe holere cheke. And charme hit with þis worde: Seynt Abraham lay on slepe, ora pro nobis, vpon þe Mounte of Olyuete, ora pro nobis. There come Oure Lord God, ora pro nobis. What doste þou? Slepeste þou, Abraham? Ora pro nobis. I ne slepe, I ne wake, ora pro nobis. My tethe I wepe for wrake, ora pro nobis. Ryse vp, said Jhesu, Abraham, and go with me, ora pro nobis. Schall not but gode falle vnto, ora pro nobis, neyþer to none oþere man, ora pro nobis, þat þis worde saye or thynke can, ora pro nobis. And þerto sey a Pater Noster and an Auee. (*wrake* 'pain, suffering')

The two Christian prayers mentioned in the charm should also be uttered when gathering sage leaves for a medicine alleviating toothache, the recipe in Ogden (1969: 18) beginning as follows:

34 To make a spyce for þe tothewerke: Tak lij leues of sawge gedirde on a foure sqwarede bedde on crose from on cornere to an oþer, and

15 English translations: "St Appollonia was a famous virgin whose teeth were extracted for the name of Christ", "tyrants crushed her teeth with iron hammers and in this torment she prayed to the Lord", "blessed Appollonia, martyr and virgin, steadfastly endured the bitter and terrible knocking out of her teeth". A version of the St Appollonia charm also appears in Ogden (1969: 18). I am grateful to University Lecturer Soili Hakulinen for help in translating the Latin passages into English.

saye at þe pullynge of euer ilk a lefe a Pater noster and Aue Maria... (*spyce* 'medicine', *bedde* 'bed of herbs')

Demaitre (2013: 192) states that in medieval times oral hygiene was largely neglected, "regardless of the extensive coverage in regimens of health and in spite of the emphatic pleas by nearly every author of a practica". There are similar instructions in the Middle English and Early Modern English medical works studied. Gilbertus Anglicus, Theodoric of Cervia, and Andrew Boorde, among others, advise their readers on ways of maintaining good oral hygiene:

35 To drye þe teeþ aftir mete with a drye lynen clooþ is profitable, for þat shal clense hem, þat no mete cleue not, ne no corrupcion amonge þe teeþ to make hem roten. (Getz 1991: 97; *mete* 'meal; food')

36 Aȝens stynkyng of þe mouth & of teth or of gomys. Wasshe þi mouth thries a day with sauge and eysil. (Cambridge, Magdalene College, Pepys Library MS 1661, p. 13; *sauge* 'sage', *eysil* 'vinegar')

37 To mundyfy the teeth, wasshe them euery mornynge with colde water and a lytle roche alome. (Boorde 1547: M1r; *mundyfy* 'cleanse', *roche alome* 'rock alum')

Dental cosmetics is another issue addressed in medieval medical treatises. In particular, ways of whitening discoloured teeth are prescribed by many authors. Surgeon Lanfrank, for example, explains that "if a mannes teeþ ben blac, in þis maner þou schalt make hem whit" (Fleischhacker 1894: 265). In the remedybooks, plenty of recipes have titles such as "For ȝelwe & stinckyng teþ" (BL Sloane MS 3153, f. 46v), "For yelowe, blake or roten tothe or stynkyng" (Cambridge, Trinity College MS O.8.35, f. 27v), and "Forto make blake teþ wite and veyre" (BL Sloane MS 2457, f. 19v; *veyre* 'fair'). Teeth that were too long were also considered unsightly. In such cases, Bernard of Gordon recommends something similar to modern odontoplasty, removal of small amounts of enamel. The procedure now involves little or no discomfort, the oral surgeon using a sanding disc or diamond bur to reduce the size of the tooth. Medieval patients were likely to experience a different level of anxiety altogether: "Whan teeþ wexiþ to longe oþer wexiþ to mych, strayne his tooþ &

sawe hym awey as myche as nediþ" (Bodleian Library, Ashmole MS 1505, f. 130r).[16]

5. Tooth-related vocabulary in Late Medieval England

The present section provides an overview of Middle English and pre-1550 Early Modern English terms for teeth, their ailments, the medicines employed, and the instruments wielded by the practitioners. The medical manuscripts and books examined were all part of the corpus for Norri's (2016) *Dictionary of Medical Vocabulary in English, 1375–1550*.[17] Except for direct quotations from medieval texts, the forms of the lexemes cited below are the same as the headwords in that two-volume work.

Details about the anatomy of teeth are rare in medical writings from the Middle Ages. Demaitre (2013: 192–193) comments on the paucity of such information, adding that even where more detailed descriptions are found, they are almost entirely based on Avicenna (980–1037). Demaitre cites a passage from Bernard of Gordon displaying the author's cursory regard for the anatomical specifics of teeth. The English translation in Bodleian Library, Ashmole MS 1505 (f. 129r) contains a similar vague reference to "anatomy" as the source for further detail:

> **38** In þe last entende þat þere biþ in a man 32 teeþ, but noȝt in alle men. And þe forteeþ biþ clepyd scindentes, þat biþ kuttynge. Þe greter teeþ biþ iclepyd molares. And biþ dyuersyd as þou myȝt se in anathomia. (*entende* 'understand', *clepyd* 'called')

Even in surgical treatises with separate sections on human anatomy, observations about teeth are mostly rather superficial. Lanfrank simply states that "in a mannes mouþ ben .xxxij. teeþ, & þerof sittiþ .xvj. in þe cheke boon, & summen han but .xxviij" (Fleischhacker 1894: 261; *cheke boon* 'jawbone'). William of Saliceto is equally succinct when he informs the reader that "in þat vppere chawl ben festned teþ 16 & in sume 14" (BL Additional MS 10440, f. 4v;

16 For reducing the size of teeth, Guy de Chauliac tells the practitioner to use a file: "If þe toþe were encresede ouer kynde, even it, and playn it sliely with a file, and move it nouȝt" (Ogden 1971: 490).

17 Hereafter *DMV*.

chawl 'jaw').[18] Henri de Mondeville is a third surgeon whose discussion of dental anatomy remains on a very general level:

39 The number of teþe ys dyuerse in diuerse men. And þerfor sum men were wunte to haue xxxij^{ti} teþe, and sum men xxviij^{ti}. And þer ben diuerse opinions wheþer þat þei be bones oþer none. (Cambridge, Peterhouse MS 118, I, f. 22vb; *wunte* 'accustomed')[19]

The surgeon with the richest vocabulary for teeth in the writings examined is Guy de Chauliac. The passage below is from one of the English translations of Chauliac's *magnum opus*. The anatomy of teeth and the relevant terminology are explained more fully than in the passages from the other surgical writers.

40 The tieþ forsoþe beeþ of þe kynde of bones, þogh þai be saide to haue felynge...Neuerþelatter þat is by resoun of some synowes goynge downe fro þe þridde payre to þe roote of ham. Þay beeþ at þe moste 32^{ti}, þat is to say 16 in eyþer iowe (þogh þat in some men is nouȝt ifounde but 28), þat is to say: þe 12 [read: 2] euene tieþ and 2 fourcornerde and 2 tuskes, 8 grynderes and 2 caysales. And þay haue rootes isette in the iowes: some oon, some two, some þre, some foure. (Ogden 1971: 45; *synowes* 'nerves')

In the extract, the names for specific teeth include *tusk* 'canine tooth', *grinder* 'molar tooth', and *caisal* 'wisdom tooth'. But Chauliac's influence on Middle English dental nomenclature went beyond those three words. The entire Latin text of his *Chirurgia* was translated into English at least three times over, and there is a fourth independent English rendering of the anatomical section (Book 1) of the work (Wallner 1991). The translators used different techniques when dealing with the Latin words and phrases. As seen

18 There are folios missing after f. 4, possibly containing a description of the lower jaw.

19 The passage continues with a discussion of the reasons why teeth were regarded as bones by some authors, but not by others. In the surgical treatise compiled by an anonymous London surgeon, the section on teeth reproduces what Henri de Mondeville wrote about the matter (Grothé 1982: f. 27rb).

from the passage below, the text in the Cambridge, Jesus College MS Q.G.23 (f. 36ra) is terminologically quite different from the manuscript edited by Ogden.

41 Þe teeþ forsoþ ben of þe kinde of bonis þo3 þei be seide to haue in hem feling...Neuerþeles þat is bi cause of certein sinewis þat descenden doun fro þe 3 peire or couple of sinewis to þe rotis of hem. Þei ben forsoþe for þe more partie 32, .s. 16 in euereiþer chaule þo3 in som be founde but 28 .s. 2 dualis or flat, 2 quadrupli & square & 2 canini or hounde teeþ & 8 grinders & 2 wong teeþ. And þei haue rotis fast in þe chaulis, som oon, som 2, som 3 or 4. (*sinewis* 'nerves', *chaule* 'jaw')

Corresponding to *tusk* in the Ogden edition, the above passage has the repetitive word pair "canini or hounde teeþ" (*DMV* s.vv. *canini*, *tooth / hound tooth*), and instead of the Latin adoption *caisales*, the reader finds a word going back to Old English, *wang tooth* (*DMV* s.v. *tooth / wang tooth*). Chauliac's Book 1 was affixed to at least two other surgeries, without any recognition of authorship, which further spread the dental terminology based on his *Chirurgia*. John of Bradmore's surgical manual called *Philomena* closely adheres to the Latin Chauliac, adopting the different names for teeth, including *molares*, untranslated:

42 As for þe moste parte comonly thes ar teth 32, þat ys to say 16 on eydyr syde or chape bon & in sum ar fownd but 28 teth. And in þe names of the teth ar thes, þat ys to say 2 duales most inwarde and next after 2 quadrupli and after them 2 canini & 8 molares & 2 caysales & þe teth hath rotes festynyd in þe chawelles. Sum teth haue on rote, sum 2, sum 3, sum 4. (BL Harley MS 1736, f. 20r; *chape bon* 'jawbone', *chawelles* 'jaws')[20]

Perhaps surprisingly, the most prolific source of different names for teeth is John Trevisa's translation of Bartholomæus Anglicus' encyclopedia *De proprietatibus rerum*, in which the medical sections largely stem from classical

20 The Latin terms are also kept as such in the Chauliac appropriation inserted into Hieronymus Braunschweig's surgical work, translated from Dutch (1525: f. B2rb).

authorities like Constantinus Africanus, Galen, Hippocrates, and Avicenna (Se Boyar 1920: 183). In Book 5, on anatomy, chapter 20 deals with teeth, with the Latin terms sometimes kept as such, at other times translated into English. For example, Latin *pares* and *quadrupli* occur as names for central and lateral incisor teeth, respectively, but the two general terms meaning 'incisor tooth' are Englished, appearing as *inkitter* (< Latin *incisor*) or *forekitter* (< Latin *praecisor*):

> **43** Constantinus seiþ þat a man þar xxxii. teeþ; sextene þen isette in þe chekebones; foure þerof þen isette in þe formest partye, and þen iclepid pares and quadrupli also. And þese teeþ þen brode and scharpe, and phisicians clepeþ hem ynkitters and forekitters, for þey þen able to kerue al þing. (Seymour 1975: 202; *chekebones* 'jawbones')

Christopher Langton uses yet another word for an incisor tooth, *divider*, so called "bycause they teare the meate" (Langton 1545?: f. D3v; *meate* 'food'). In Middle English and Early Modern English medical writings, the same referent often carries a host of names in different treatises. The vocabulary for canine and molar teeth, like that for incisors, varies from writer to writer. The terms for canine teeth in *DMV* comprise *canine*, (plural) *canini*, *dog tooth*, *eye tooth*, *hound tooth*, *neck of a maid*, and *tusk*, while for the molars we find *axle tooth*, *cheek tooth*, *great tooth*, *grinder*, *gum* (short for *gum-tooth*), and *molar*. Besides the above-mentioned *caisal* and *wang tooth*, there was a third word denoting a wisdom tooth, *tooth of sapience*.[21] Some of the lexemes are only attested in a single text, one characteristic of the medical vocabulary of the period 1375–1550 being its impermanence (Norri 2004: 130). A certain amount of lexical turnover is to be expected at a time when the use of the vernacular is being pioneered even in the most learned kinds of medical writing.

In the discussions of dental troubles, *toothache* and its variant *aching of (the) teeth* are the most frequent terms. The painful affliction is also called *toothwark*, *gout of teeth*, and *gout in the teeth*. The two longer phrases express

21 Norri (1998: 173–182, 251–255, 285–288) discusses equivalent terms for body parts in academic treatises, surgical manuals, and remedybooks during the late Middle English and pre-1550 Early Modern English periods.

the idea that toothache was thought to be caused by morbid humours dropping on the teeth, Old French *goutte* and Latin *gutta* meaning 'a drop'. The same notion underlies *flux of the teeth*, used in an English translation of Bernard of Gordon (Bodleian Library, Ashmole MS 1505, f. 130v) for the flow of watery matter from brain to teeth.

Tooth decay is another area with a clustering of lexemes. The list of the relevant headwords in *DMV* is long indeed: *breaking*, *corrosion*, *corruption*, *fretting*, *gnawing*, *holing* (cf. *hole* 'cavity in tooth'), *perforation of teeth*, *piercing (of the teeth)*, *putrefaction*, *rottedness*, *rottenness (of teeth)*, *rotting (of teeth)*, *rottingness*, and *thirling* (cf. *thirl* 'hole') all occur in passages dealing with dental caries and cavity formation. A third lexical concentration occurs in the terminology for an unpleasant feeling in teeth attributed to sensitivity to cold or food containing acid. In modern dentistry, acids from everyday foods and drinks are known to be one reason for the development of cold-sensitive teeth. In his surgical treatise, Joannes de Vigo states that the sour things responsible for the condition may come from outside or inside the human body:

44 Congelation chaunceth to the teeth of outward or inwarde thynges. Of outwarde when a man eateth soure thynges. Of inwarde when sower vapours ascende from the stomacke. (Vigo 1543: f. Ff2rb)

Among other writers, Guy de Chauliac emphasizes the role of hot substances in the treatment of *congelation* of teeth:

45 Of girlynge and congelacioun of þe tieþ.[22] Holde hote wyne or aqua vite in the mouthe, or rubbe þe tieth wiþ rotede salte. Or lay þerto nottes or walnotes rostede al hote and suche oþer hetynge þinges, or propurly soche, as purseleyne, and chewe þe sede þerof. (Ogden 1971: 490; *purseleyne* 'purslane, *Portulaca oleracea*')

The different words and phrases for the condition listed in *DMV* include *chilling (of teeth)*, *congealing of teeth*, *congelatio*, and *congelation (of the teeth)*. To these can be added a mistranslation of Latin *congelatio* as *curding*

22 The Latin heading in McVaugh (1997: 360) reads "De stupore et congelacione dencium".

("cruddynge") in Ogden (1971: 483). The translator has confused two meanings of the verb *congelare*, 'to become frozen, freeze' and 'to cause to solidify, coagulate'.[23]

Numbness of teeth is a fourth ailment for which the works studied employ a notable number of equivalent terms. Severe dental pain due to injury or tooth decay may eventually stop, the affected tooth becoming numb when the infection spreads to the pulp and regions around the roots.[24] Joannes de Vigo (1543: f. Ff2rb) cites less dramatic reasons for the loss of feeling, that is, holding cold liquids or narcotic medicines in the mouth. Medieval medical writers were familiar with the condition, variously calling it *astonying of teeth*, *dormitation*, *grilling of the teeth*, *sleeping*, *slumbering of teeth*, *stonying of teeth*, and *stupor*. The verbs *astonen* and *stonen* were both used in the senses 'stun', 'stupefy', and 'deprive of feeling' (*MED* s.vv. *astonen* v., *stonen* v.2). One of the meanings of the verb *grillen* was 'to shudder, quake, be afraid' (*MED* s.v., sense 1c). In (45), the tooth malady is compared to mental stupor.

From outside the four lexical concentrations discussed, mention can be made of the phrases for grinding of teeth or bruxism (*grinding of the teeth*, *grinting of the teeth*) and looseness of teeth (*shaking of the teeth*).

The pharmaceutical lexemes that appear in the instructions for dental care and cure are mostly general words like *ball* 'pill or bolus', *fumigation*, *ointment*, *paste*, *pill*, *plaster*, *powder*, or *pultes* 'poultice'. *Dentifrice* 'powder for cleaning teeth', from Latin *dentifricium*, is a rare instance of a term restricted to passages on dental matters. The three independent translations of Guy de Chauliac treat the original Latin word differently.[25] The translator of Cambridge, Jesus College MS Q.G.23 (f. 323ra) has taken over *dentifricium* in the form *dentifrice,* with a minor modification of the ending only. In the text edited by Ogden (1971: 490), *dentifricium* is rendered as "frotynge of tieth". The third translator combines the two approaches, producing the repetitive word pair "dentifriciez i. frotyng of teþe" (see the quotation from the New York Academy of Medicine MS 12 in *MED* s.v. *dentifricie*).

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23 *Oxford Latin Dictionary* (ed. Glare) s.v. *congelō*. For further examples of mistranslations from Latin in Middle English medical writings, see Pahta and Carrillo Linares (2006: 111–115) and Norri (2017: 580–582, 596–597, 606–607).

24 https://southlanddentalcare.com/signs-you-need-emergency-dental-care/.

25 For the Latin passage, see McVaugh (1997: 360).

The different translational techniques are also seen in the handling of another Latin term employed by Chauliac, *resumptivum*, signifying a medicine for restoring a loose tooth.[26] The most thorough Englishing is again found in Ogden (1971: 489), where "restorynge medecynes" appears in the corresponding sentence. This time, the text in the Jesus College manuscript couples a Latin adoption and its English equivalent in the co-ordinated phrase "resumptifs or fastners" (f. 322rb). The translator of the New York Academy of Medicine manuscript adheres to the Latin original most closely, opting for "resumptiuez" (*MED* s.v. *resumptive*).[27]

In the terminology for instruments, the type of cautery most often mentioned in the context of teeth is a cautery with a narrow round point, easy to insert into a dental cavity. The Latin phrase *cauterium punctuale* is attested in the English works in its original form, slightly Anglicized (*punctual cautery*), or more fully translated (*pointed cautery*). The adjective may be used alone, as a noun: "The fourþe instrument is a punctale, hauynge a smal poynte and rounde" (Ogden 1971: 572).[28] Like cauteries, other instruments had a wider use than just dental operations. Several surgical manuscripts include a picture of a *levator*, also called *levatory* or *levor*, the lexical variants going back to Old French *levatoire*, *levier*, Anglo-Norman *lev(i)er*, and Latin *levator*, *levatorium*. Henri de Mondeville in fact had difficulties in coming up with an appropriate verbal explanation, confessing that "I maye nott well writte þe discripcion of a leuatorie but in þis maner", then adding a picture (Cambridge, Peterhouse MS 118, I, f. 91vb).[29] The instrument, used for extracting teeth as well as raising depressed portions of fractured bone, was either bifurcate (*biforked levatory*, *levatory with two branches*, *levor with two branches*, *two-forked levor*) or non-

26 McVaugh (1997: 359).

27 In their treatment of Latin *resumptivum*, the three translations conform to what Wallner (1991: 159) writes about them: "Whereas the New York MS closely adheres to its Latin antecent and the Paris MS attempts to render the text in idiomatic Middle English, the Jesus College version makes use of paraphrases and explanations." With *dentifricium*, however, the picture is slightly different.

28 Further examples of the nominal use (some ambiguous between a noun and an adjective) are given in *DMV* s.vv. *punctal* and *punctual*. For pictures of the *cauterium punctuale*, see Wallner (1965), McVaugh (1997: 418), and Cambridge, Jesus College MS Q.G.23, f. 372va.

29 Pictures of the instrument are also found in Wallner (1965), McVaugh (1997: 189), Cambridge, Jesus College MS Q.G.23, f. 185ra, and in John of Bradmore's *Philomena* in BL Harley MS 1736, f. 42v.

branching (*simple levatory*, *single levatory*, *simple levor*, *single levor*).[30] For tooth extraction, a barber-surgeon's or tooth-drawer's tool kit would also typically contain various types of forceps. Some of them had serrated jaws to enable a firmer grip of the tooth (*scotched pinsons*, *toothed pinsons*, *toothed tenacles*), while others had jaws forming a hollow (*hollow pinsons*, *hollow tenacles*, *cannulate tenacles*). Besides dental operations, both types of forceps were used to remove the shafts of arrows lodged in the body.

By the time our authors wrote their works, dental scrapers had a long history behind them, as shown by the pictures from Albucasis (936–1013) in Kelly (2009: 55). Guy de Chauliac writes about "hardenede filþes" in teeth, telling the reader to "schaue hem with schauynge knyfes and wiþ spatures" (Ogden 1971: 490; *spature* 'surgical chisel'). The three translations of Chauliac again manifest different translational approaches. The New York Academy of Medicine manuscript adopts the Latin *raspatorium* as *raspatoriez* (*MED* s.v. *raspatorie*), while the translator of the Jesus College text comes up with the partial translation *raspours* (f. 320va), from the verb *raspen* and the agentive suffix *-our* (*MED* s.vv). The terms for instruments for scraping a hard surface in the treatises studied further include *scraper*, *shaver*, and *raffe*, the last-mentioned of unknown origin.

6. Concluding remarks

The lot of anyone suffering from toothache or other dental troubles in medieval times was a sad one. The possibilities of removing the cause of the affliction were limited, and the aching would no doubt continue for an extended period of time in most cases, with numbness and loss of the tooth as the final outcome. If that happened, prosthetic repair would be very difficult and costly, involving the use of materials like gold chains. The remedies attempted reflect the severity of the pain felt by the patient. Dental cavities were cauterized with red-hot iron, acid was poured into them, and fumigations of seeds of poisonous plants were applied. God, Jesus, and saints are invoked in the many charms against toothache found in remedybooks. The theoretical framework of dentistry was largely derived from Arabic writers like Avicenna and Albucasis, who had flourished several centuries ago.

30 Cf. modern dental elevators, also called luxators.

On the more positive side of things, the importance of good oral hygiene was emphasized in contemporary medical writings, the authors advising their readers on the proper ways of cleansing one's teeth. The dangers that frequent vomiting and certain foods, especially acidic ones, posed for dental enamel were recognized quite correctly. Modern dentists would also agree with the exhortation to remove all the roots carefully when a tooth is extracted. Some writers candidly admit the difficulties of treating dental ailments, Guy de Chauliac even warning his readers against believing the empty promises of miscellaneous tooth-drawers.

The terminology surrounding teeth and their ailments presents a picture similar to earlier studies of Middle English and Early Modern English medical language. For a particular referent, there often exist several equivalent terms. This is seen in the lexical fields for teeth, dental conditions, medicinal preparations, and instruments alike. The proliferation of words and phrases sometimes stems from the same Latin work being translated several times over, each translator opting for their own solution in rendering the term in the source text. The three independent translations of Guy de Chauliac, in particular, had a significant role in the shaping of anatomical, including dental, terminology in late medieval England.

The present article is a general survey of dental treatment and related vocabulary in late medieval England. More detailed studies of anatomical, pathological, and therapeutical issues would no doubt further add to what we know about the development of this central area of medicine. In future lexical analyses, the origins, meanings, and uses of individual lexemes can be scrutinized more closely. It is also possible to widen the selection of works studied. The search string ".j1 dentristry" yields just three hits in the Voigts and Kurtz (2014) database,[31] but dental matters are often discussed in passages inside larger treatises on surgery or academic medicine. Nor should remedybooks, central for the study of charms and sources for lexemes not recorded elsewhere, be ignored in this context. More extensive studies of Latin and Arabic texts would be illuminating, as those works are ultimate sources for many of

31 In the search string, ".j1" refers to the "subject descriptor". The entry numbers for the three hits are 6274.00, 7165.00, and 7594.00. Interestingly, entry 7165.00 goes back to the tenth-century Haly Abbas, yet another indication of Arabic influence on medieval dentistry. The two other eVK2 entries refer to collections of medicinal recipes.

the ideas, and words, in the Middle English and Early Modern English medical writings.

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For the texts included in *DMV*, the abbreviated titles used in the dictionary are given. In the case of manuscripts, whether edited or unedited, references are provided to the Voigts and Kurtz database (eVK2) entries that concern sections from the particular works. The information about early printed books includes the Pollard and Redgrave *Short-Title Catalogue* (*STC*) numbers.

Primary sources: manuscripts

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