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# An analysis of oral and maxillofacial pathology found in adults over a 30-year period

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**BACKGROUND: The aim of this study was to determine the range of histologically diagnosed lesions in 44 000 oral and maxillofacial pathology specimens, from adults 17 years and older, submitted for diagnosis to our laboratory over a 30-year period (1973–2002).**
**MATERIALS: All entries for specimens from the patients were retrieved and compiled into 12 diagnostic categories.**
**RESULTS: During the period, 44 007 specimens comprised a male-to-female ratio of 0.9:1. The diagnostic category with the largest number of specimens was mucosal pathology (36.0%) followed by odontogenic cysts (13.8%). Malignant tumours accounted for 5.4% of all specimens and benign tumours 4.6%.**
**CONCLUSION: This survey showed that while the majority of diagnoses are benign, approximately one in 19 cases required major head and neck surgery for malignant disease.**
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**Keywords:** adults; maxillofacial; oral; pathology; prevalance

## Introduction

Most studies on the prevalence of disease are epidemiological in nature, concerned with documenting the incidence of specific conditions within a given population over a given time frame. With the exception of cancer rates which are published by the Office of National Statistics (1), the majority of other investigations lack histological confirmation of diagnosis. Such studies include dental caries (2, 3), periodontal disease and oral mucosal lesions (4, 5). Of those studies with histological confirmation, most are limited to certain groups such as paediatric populations (6, 7), those submitted by general dental practitioners (8, 9) or specific conditions such as odontogenic cysts (10, 11), odontogenic tumours (12, 13) and salivary gland tumours (14, 15).

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Relatively few studies document the range of histologically diagnosed lesions that affect the oro-maxillofacial complex in an adult population. Three studies from the USA include 400 cases over a single year (16), 4793 cases over 20 years (17) and 15 783 specimens over 18.5 years (18). Until now the largest study is that of Bhaskar (19) who presented 20 575 specimens from an American population. With the exception of a single study based in Singapore (20) no other similar studies were found in the English language literature.

Although specific conditions may vary between select groups within a general population, as a result of factors such as age, sex and ethnicity, general inferences from population studies can often be applied to the general population. The aim of this study was to determine the range of histologically diagnosed lesions in 44 000 oral and maxillofacial pathology specimens, from a European population (17 years and older), submitted for diagnosis to our laboratory over a 30-year period (1973–2002).

## Material and methods

The Department of Oral Pathology in the School of Clinical Dentistry, Sheffield, UK, has recorded all acceded specimens into a computerized diagnostic index database. As the date of birth and demographic information is recorded, it is possible to retrieve data on patients in a specific age range.

Since 1989, data from all specimens received in the department have been prospectively entered into a computer database. Subsequently data from the files between 1973 and 1988 were computerized. The structure of the database has been modified several times and a Foxpro™ Windows database is now used. Initial demographic data is entered by technical staff, when the specimen is received, and the record completed by secretarial staff when the final report has been issued. The diagnoses are entered using an alphanumeric code comprising two letters, which designates the diagnostic category (e.g. odontogenic tumour, OT) and three numbers which refer to the specific condition within the diagnostic category (e.g. ameloblastoma, OT402). There are 15 diagnostic categories which contain codes for 627 diagnoses and, as these codes are entered, a 'look-up' table containing the diagnoses is used to avoid the input of

typographical errors. If necessary, the codes can be linked via further 'look-up' tables to other coding systems such as Systematized Nomenclature of Pathology (SNOP) or Systematized Nomenclature of Medicine (SNOMED).

All entries for the specimens were retrieved and, for the sake of brevity, the diagnoses were compiled into 12 diagnostic categories (see Tables 1–13). The data in each category included number of specimens, male:female

**Table 1** Number of diagnoses by category 1973–2002

| *Diagnostic category* | *Number* | *Male* | *Female* | *M:F ratio* | *Percentage of group* |
|---|---|---|---|---|---|
| Mucosal pathology[a] | 15 834 | 6651 | 8988 | 0.74 | 36.0 |
| Odontogenic cysts[a] | 6052 | 3365 | 2677 | 1.26 | 13.8 |
| Tooth pathology[a] | 4587 | 2187 | 2397 | 0.91 | 10.4 |
| Miscellaneous pathology[a] | 3974 | 1866 | 2104 | 0.89 | 9.0 |
| Salivary gland pathology[a] | 3123 | 1463 | 1656 | 0.88 | 7.1 |
| Benign tumours[a] | 2452 | 1226 | 1222 | 1.00 | 5.6 |
| Periodontal pathology[a] | 2421 | 1021 | 1394 | 0.73 | 5.5 |
| Malignant tumours[a] | 2360 | 1430 | 947 | 1.51 | 5.4 |
| Bone pathology | 1026 | 429 | 597 | 0.72 | 2.3 |
| Connective tissue pathology[a] | 684 | 329 | 353 | 0.93 | 1.6 |
| Non-odontogenic cysts | 582 | 374 | 208 | 1.80 | 1.3 |
| Normal tissue | 581 | 242 | 339 | 0.71 | 1.3 |
| Odontogenic tumours | 331 | 161 | 170 | 0.95 | 0.8 |
| Total | 44 007 | 20 744 | 23 052 | 0.90 | 100.00 |

[a]In some cases the sex of the patient is unknown.

**Table 2** Mucosal and skin pathology

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Fibrous hyperplasia[a] | 6458 | 2291 | 4158 | 0.55 | 51.6 (14.3) | 40.8 |
| Lichen planus | 2973 | 1153 | 1820 | 0.63 | 53.5 (13.5) | 18.8 |
| Hyperkeratosis[a] | 2481 | 1326 | 1153 | 1.15 | 52.6 (14.6) | 15.7 |
| Epithelial dysplasia[a] | 1280 | 586 | 512 | 1.14 | 58.8 (13.7) | 8.1 |
| Mucosal inflammation (non-specific) | 518 | 226 | 292 | 0.77 | 51.7 (17.0) | 3.3 |
| Candidosis – chronic hyperplastic | 439 | 276 | 163 | 1.69 | 52.3 (12.5) | 2.8 |
| Antral polyp | 138 | 85 | 53 | 1.60 | 40.3 (14.3) | 0.9 |
| Benign mucous membrane pemphigoid | 128 | 40 | 88 | 0.45 | 60.9 (13.9) | 0.8 |
| Papillary hyperplasia | 111 | 53 | 58 | 0.91 | 53.9 (14.1) | 0.7 |
| Lymphoid hyperplasia | 106 | 51 | 55 | 0.93 | 39.6 (17.1) | 0.7 |
| Erythema migrans | 103 | 49 | 54 | 0.91 | 52.8 (13.3) | 0.7 |
| Intradermal nevus | 94 | 29 | 65 | 0.45 | 41.8 (15.5) | 0.6 |
| Ephelis | 90 | 24 | 66 | 0.36 | 43.3 (15.3) | 0.6 |
| Solar keratosis | 82 | 54 | 28 | 1.93 | 66.2 (12.1) | 0.5 |
| Median rhomboid glossitis | 79 | 43 | 36 | 1.19 | 51.8 (12.1) | 0.5 |
| Focal melanosis | 62 | 21 | 41 | 0.51 | 49.6 (15.1) | 0.4 |
| Sebaceous cyst | 54 | 36 | 18 | 2.00 | 39.4 (16.4) | 0.3 |
| Epithelial hyperplasia | 52 | 19 | 33 | 0.58 | 54.9 (14.9) | 0.3 |
| Melanin pigmentation[a] | 50 | 14 | 35 | 0.40 | 47.5 (13.4) | 0.3 |
| Discoid lupus erythematosus | 47 | 21 | 26 | 0.81 | 51.9 (13.8) | 0.3 |
| Traumatic ulcerative granuloma with stromal eosinophilia | 44 | 14 | 30 | 0.47 | 57.6 (15.3) | 0.3 |
| Crohn's disease | 35 | 22 | 13 | 1.69 | 34.9 (15.6) | 0.2 |
| White sponge nevus | 31 | 21 | 10 | 2.10 | 35.9 (15.9) | 0.2 |
| Seborrhoeic keratosis | 30 | 18 | 12 | 1.50 | 63.9 (16.9) | 0.2 |
| Others[b] | 368 | | | | | 2.2 |
| Total | 15 834 | 6651 | 8988 | 0.74 | | |

[a]In some cases the sex of the patient is unknown.
[b]Fordyce anomaly ($n = 27$), Pemphigus ($n = 26$), Angina bullosa haemorrhagica ($n = 24$), Miscellaneous skin lesions ($n = 21$), Hairy leukoplakia ($n = 17$), Leukoedema ($n = 15$), Compound nevus ($n = 14$), Verruca plana ($n = 14$), Oral submucous fibrosis ($n = 13$), Eosinophilic granuloma ($n = 12$), Verrucous hyperplasia ($n = 12$), Leukokeratosis nictina palate ($n = 11$), Fibrous histiocytoma ($n = 10$), Focal epithelial hyperplasia ($n = 10$), Hairy tongue ($n = 10$), Solar elastosis ($n = 10$), Erythema multiforme ($n = 9$), Verruciform xanthoma ($n = 9$), Lentigo ($n = 7$), Blue nevus ($n = 6$), Nasal polyp ($n = 6$), Labial fissure ($n = 5$), Burn (unspecified) ($n = 4$), Calcifying epithelioma of Malherbe ($n = 4$), Mucosal pigmentation – unclassified ($n = 4$), Oral focal mucinosis ($n = 4$), Pseudoepitheliomatous hyperplasia ($n = 4$), Trichilemmal cyst ($n = 3$), Psoriasis ($n = 3$), Keratocanthoma ($n = 3$), Sub-epithelial bullous process ($n = 3$), Plasma cell mucositis ($n = 3$), Chondrodermatitis helicus ($n = 2$), Eccrine hidrocystoma ($n = 2$), Junctional nevus ($n = 2$), Sebaceous hyperplasia ($n = 2$), Vesicle (non-specific) ($n = 2$), Lichen nitidus ($n = 2$), Apocrine hidrocystoma ($n = 1$), Dariers disease ($n = 1$), Dermatitis herpetiformis ($n = 1$), Elastosis ($n = 1$), Burn (aspirin) ($n = 1$), Telangiectasia ($n = 1$), Fibrous papule of the nose ($n = 1$), Metastatic calcinosis cutis ($n = 1$), Combined nevus ($n = 1$), Fibroepithelioma of pinkus ($n = 1$), Proliferative verrucous leukoplakia ($n = 1$), Dysplastic nevus ($n = 1$), Inverted follicular keratosis ($n = 1$), Xanthelasma ($n = 1$).

**Table 3** Odontogenic cysts

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Radicular cyst[a] | 3229 | 1667 | 1555 | 1.07 | 38.7 (14.2) | 53.4 |
| Dentigerous cyst | 1081 | 698 | 383 | 1.83 | 44.8 (15.0) | 17.9 |
| Odontogenic keratocyst | 591 | 329 | 262 | 1.25 | 45.8 (19.6) | 9.8 |
| Residual cyst[a] | 564 | 331 | 231 | 1.43 | 50.9 (14.6) | 9.3 |
| Paradental cyst[a] | 367 | 210 | 156 | 1.35 | 29.7 (10.5) | 6.1 |
| Odontogenic cyst – unclassified | 165 | 101 | 64 | 1.58 | 42.6 (16.3) | 2.7 |
| Lateral periodontal cyst | 25 | 14 | 11 | 1.27 | 48.4 (12.8) | 0.4 |
| Gingival cyst | 15 | 4 | 11 | 0.36 | 52.5 (12.1) | 0.2 |
| Sialo – odontogenic cyst | 10 | 8 | 2 | 4.00 | 49.7 (17.1) | 0.2 |
| Eruption cyst | 5 | 3 | 2 | 1.50 | 36.4 (15.7) | 0.1 |
| Total | 6052 | 3365 | 2677 | 1.26 | | |

[a]In some cases the sex of the patient is unknown.

**Table 4** Tooth pathology

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Chronic periapical granuloma[a] | 3547 | 1681 | 1862 | 0.90 | 38.4 (13.9) | 77.3 |
| Dental follicle[a] | 412 | 200 | 211 | 0.95 | 32.5 (13.6) | 9.0 |
| External resorption (tooth) | 132 | 66 | 66 | 1.00 | 37.3 (14.2) | 2.9 |
| Pulp necrosis | 66 | 26 | 40 | 0.65 | 41.0 (14.9) | 1.4 |
| Caries | 57 | 38 | 19 | 2.00 | 37.2 (16.9) | 1.2 |
| Hypercementosis | 50 | 17 | 33 | 0.52 | 46.5 (17.3) | 1.1 |
| Tooth fragment | 38 | 11 | 27 | 0.41 | 50.5 (17.7) | 0.8 |
| Periapical abscess | 35 | 18 | 17 | 1.06 | 38.8 (16.2) | 0.8 |
| Chronic pulpitis | 31 | 21 | 10 | 2.10 | 36.7 (11.6) | 0.7 |
| Residual granuloma | 26 | 16 | 10 | 1.60 | 58.1 (9.1) | 0.6 |
| Pulp abscess | 20 | 11 | 9 | 1.22 | 39.7 (15.4) | 0.4 |
| Tetracycline staining | 20 | 6 | 14 | 0.43 | 24.2 (4.9) | 0.4 |
| Acute pulpitis | 19 | 9 | 10 | 0.90 | 30.8 (13.2) | 0.4 |
| Supernumery tooth | 14 | 6 | 8 | 0.75 | 33.9 (9.6) | 0.3 |
| Dentinogenesis imperfecta | 11 | 3 | 8 | 0.38 | 26.7 (11.8) | 0.2 |
| Internal resorption | 11 | 7 | 4 | 1.75 | 36.3 (13.1) | 0.2 |
| Tooth anomaly | 11 | 5 | 6 | 0.83 | 27.2 (8.3) | 0.2 |
| Enamel hypoplasia | 10 | 3 | 7 | 0.43 | 23.7 (5.3) | 0.2 |
| Others[b] | 77 | | | | | 1.7 |
| Total | 4587 | 2187 | 2397 | 0.91 | | |

[a]In some cases the sex of the patient is unknown.
[b]Fractured tooth, Pulp fibrosis ($n = 8$), Pulp stone ($n = 7$), Concrescence ($n = 6$), Dilaceration ($n = 6$), Residual abscess ($n = 6$), Amelogenesis imperfecta ($n = 5$), Pulp polyp ($n = 5$), Attrition ($n = 4$), Ankylosis ($n = 3$), Caries – primary tooth ($n = 3$), Fusion ($n = 3$), Dentinal dysplasia ($n = 2$), Dentine abnormal ($n = 2$), Taurodontism ($n = 2$), Dental calculus ($n = 1$), Enamel pearl ($n = 1$), Gemination ($n = 1$), Hypophosphatasia ($n = 1$), Vitamin D resistant rickets ($n = 1$), Tooth germ ($n = 1$), Enamel hypocalcification ($n = 1$).

ratio, mean age and standard deviation. Occasional infrequent diagnoses have been added as a footnote to the relevant tables to reduce their size.

## Results

During the 30-year period, 53 666 specimens were received from Hospitals in Sheffield and the South Yorkshire/East Midlands region, occasional hospitals elsewhere and General Dental Practitioners. The population base of the geographic area is approximately 5.5 million. Of these 53 666 specimens, 4406 (8.2%) were from children between the age 0 and 16 years; a report on this population has been published elsewhere (6). For 2120 (4.0%) specimens no age could be determined. There were 180 (0.3%) specimens for which there were no histological diagnoses; these comprised microbial swabs and cyst aspirates. In addition, 2953 (5.5%) specimens were cases that were incisional biopsies of further excised specimens or lesions that had recurred at a previously operated site and were omitted so as not to overestimate the true prevalence of diagnoses, most of these were cases of squamous cell carcinoma (SCC).

A total of 44 007 (82.0%) specimens, with 393 different diagnoses, were submitted from adult patients 17 years and over. Of these cases, there were 20 744 specimens from male and 23 052 from female patients (M:F = 0.9:1). In 211 cases (0.5%), the gender of the patient was not provided with the clinical details.

Table 1 summarizes the number of diagnoses by category for all adult patients over the 30-year period. Of these 581 (1.3%) were diagnosed as normal tissue.

**Table 5** Miscellaneous pathology

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Non-specific ulceration | 919 | 427 | 492 | 0.87 | 57.8 (16.9) | 23.1 |
| Non-diagnostic[a] | 894 | 415 | 478 | 0.87 | 48.4 (18.4) | 22.5 |
| Scar tissue[a] | 699 | 317 | 381 | 0.83 | 43.6 (15.4) | 17.6 |
| Granulation tissue | 450 | 255 | 195 | 1.31 | 46.3 (16.7) | 11.3 |
| Amalgam tattoo[a] | 209 | 63 | 145 | 0.43 | 50.0 (19.9) | 5.3 |
| Sinus | 187 | 97 | 90 | 1.08 | 46.9 (15.5) | 4.7 |
| Foreign body reaction | 106 | 53 | 52 | 1.02 | 48.4 (16.0) | 2.7 |
| Abscess | 81 | 35 | 46 | 0.76 | 46.4 (16.5) | 2.0 |
| Healing tissue | 65 | 24 | 41 | 0.59 | 47.7 (17.6) | 1.6 |
| Fistula | 61 | 45 | 16 | 2.81 | 47.9 (14.4) | 1.5 |
| Granulomatous inflammation | 43 | 18 | 25 | 0.72 | 49.2 (16.4) | 1.1 |
| Organizing thrombus | 39 | 18 | 21 | 0.86 | 54.4 (16.6) | 1.0 |
| Foreign body granuloma | 32 | 15 | 17 | 0.88 | 47.1 (15.5) | 0.8 |
| Foreign body[a] | 26 | 8 | 18 | 0.44 | 43.7 (16.1) | 0.7 |
| Haematoma | 16 | 7 | 9 | 0.78 | 38.9 (17.3) | 0.4 |
| Necrotic tissue | 19 | 10 | 9 | 1.11 | 4.7 (17.9) | 0.5 |
| Ora-facial granulomatosis | 16 | 8 | 8 | 1.00 | 40.6 (10.9) | 0.4 |
| Irradiation damage | 15 | 11 | 4 | 2.75 | 65.5 (12.9) | 0.4 |
| Artefact | 14 | 6 | 8 | 0.75 | 56.4 (15.1) | 0.4 |
| Sarcoidosis | 13 | 4 | 9 | 0.44 | 43.7 (16.2) | 0.3 |
| Others[b] | 70 | | | | | 1.8 |
| Total | 3974 | 1866 | 2104 | 0.89 | | |

[a]In some cases the sex of the patient is unknown.
[b]Candidosis – chronic atrophic ($n = 10$), Actinomycosis ($n = 8$), Condyloma acuminatum ($n = 7$), Fungal organisms ($n = 5$), Candidosis – acute pseudomembranous ($n = 4$), Cholesteatoma ($n = 4$), Viral infection ($n = 4$), Aspergillosis ($n = 3$), Dystrophic calcification ($n = 3$), Gorlin's syndrome ($n = 3$), Graft versus host disease ($n = 3$), Candidosis – chronic mucocutaneous ($n = 2$), Choristoma ($n = 2$), Molluscum contagiosum ($n = 2$), Rhinolith ($n = 2$), Antrolith ($n = 1$), Candidosis – acute ($n = 1$), Herpes simplex virus ($n = 1$), Histoplasmosis ($n = 1$), Hyaline angiopathy ($n = 1$), Melkerson – Rosenthal syndrome ($n = 1$), Mucopolysaccharidosis ($n = 1$), Pseudolymphoma ($n = 1$).

**Table 6** Salivary gland pathology excluding neoplasia

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Mucous extravasation cyst[a] | 1502 | 868 | 632 | 1.37 | 33.7 (13.3) | 48.1 |
| Chronic sialoadenitis | 864 | 347 | 517 | 0.67 | 49.7 (16.3) | 27.7 |
| Mucous retention cyst[a] | 218 | 99 | 117 | 0.85 | 51.6 (16.6) | 7.0 |
| Sjogren's syndrome | 363 | 64 | 299 | 0.21 | 56.0 (13.3) | 11.6 |
| Sialolithiasis | 112 | 61 | 51 | 1.20 | 51.4 (14.3) | 3.6 |
| Benign lymphoepithelial lesion | 29 | 8 | 21 | 0.38 | 53.8 (15.6) | 0.9 |
| Necrotizing sialometaplasia | 8 | 5 | 3 | 1.67 | 49.8 (16.9) | 0.3 |
| Sialosis | 8 | 2 | 6 | 0.33 | 39.8 (13.7) | 0.3 |
| Hamartoma – minor salivary gland | 5 | 4 | 1 | 4.00 | 45.4 (15.2) | 0.2 |
| Hyperplastic salivary gland | 4 | 2 | 2 | 1.00 | 41.3 (20.6) | 0.1 |
| Acute sialoadenitis | 3 | 2 | 1 | 2.00 | 60.7 (19.9) | 0.1 |
| Oncocytosis | 3 | 1 | 2 | 0.50 | 50.7 (3.3) | 0.1 |
| Salivary duct hyperplasia | 2 | 0 | 2 | 0.00 | 63.0 (10.0) | 0.1 |
| Hypoplastic salivary gland | 1 | 0 | 1 | 0.00 | 55.0 (0.0) | 0.0 |
| Kimura's disease | 1 | 0 | 1 | 0.00 | 37.0 (0.0) | 0.0 |
| Total | 3123 | 1463 | 1656 | 0.88 | | |

[a]In some cases the sex of the patient is unknown.

Tables 2–13 summarize the data in each diagnostic category. The 20 most frequent diagnoses are listed in Table 14, these comprise 32 616 cases, nearly 75% of all specimens.

## Discussion

Over 30 years, adults (over 16 years of age) accounted for 82% of all submitted specimens; these excluded those with no known age as well as recurrent lesions. Overall, there was a slightly increased propensity for oral and maxillofacial disease to occur in females, with the male:female ratio at 0.9:1. However, males were more commonly affected by malignant disease and odontogenic as well as non-odontogenic cysts.

Our study was limited to patients 17 years and over; therefore, direct comparisons with previous reports are difficult. Most studies are either limited to specific population groups such as children (6, 7), military (21) or specific entities such as odontogenic tumours (12). All

**Table 7** Benign tumours including salivary gland tumours

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Squamous papillomas[a] | 1320 | 716 | 601 | 1.19 | 45.6 (16.0) | 53.8 |
| Pleomorphic adenoma | 303 | 144 | 159 | 0.91 | 48.4 (17.2) | 12.4 |
| Neurofibroma | 188 | 81 | 107 | 0.76 | 46.0 (17.6) | 7.7 |
| Lipoma | 170 | 90 | 80 | 1.13 | 58.9 (13.4) | 6.9 |
| Traumatic neuroma | 151 | 53 | 98 | 0.54 | 37.3 (14.5) | 6.2 |
| Monomorphic adenoma | 76 | 31 | 45 | 0.69 | 66.6 (11.8) | 3.1 |
| Neurilemmoma | 43 | 15 | 28 | 0.54 | 48.6 (19.7) | 1.8 |
| Granular cell tumour[a] | 28 | 7 | 20 | 0.35 | 46.7 (13.5) | 1.1 |
| Warthin Tumour | 27 | 18 | 9 | 2.00 | 57.1 (13.3) | 1.1 |
| Fibrolipoma | 25 | 13 | 12 | 1.08 | 54.3 (15.7) | 1.0 |
| Lymphangioma | 23 | 17 | 6 | 2.83 | 43.5 (16.1) | 0.9 |
| Osteoma | 12 | 5 | 7 | 0.71 | 45.7 (19.0) | 0.5 |
| Unclassified benign tumour | 8 | 2 | 6 | 0.33 | 37.9 (19.3) | 0.3 |
| Papillary cyst adenoma | 8 | 4 | 4 | 1.00 | 70.1 (7.8) | 0.3 |
| Myoepithelioma | 8 | 2 | 6 | 0.33 | 44.6 (15.7) | 0.3 |
| Osteoblastoma | 7 | 2 | 5 | 0.40 | 35.4 (10.5) | 0.3 |
| Angiomyoma | 6 | 4 | 2 | 2.00 | 36.5 (12.4) | 0.2 |
| Intraductal papilloma | 5 | 2 | 3 | 0.67 | 57.2 (12.8) | 0.2 |
| Fibroma | 4 | 2 | 2 | 1.00 | 45.5 (8.9) | 0.2 |
| Fibromatosis | 4 | 1 | 3 | 0.33 | 55.3 (7.6) | 0.2 |
| Osteochondroma | 4 | 2 | 2 | 1.00 | 50.3 (5.5) | 0.2 |
| Oncocytoma | 4 | 2 | 2 | 1.00 | 73.5 (9.8) | 0.2 |
| Trichoepithelioma | 4 | 1 | 3 | 0.33 | 52.5 (15.7) | 0.2 |
| Unclassified salivary tumour | 4 | 1 | 3 | 0.33 | 47.8 (17.5) | 0.2 |
| Others[b] | 20 | | | | | 0.8 |
| Total | 2452 | 1226 | 1222 | 1.00 | | |

[a]In some cases the sex of the patient is unknown.
[b]Leiomyoma ($n = 3$), Sialoadenoma papilliferum ($n = 3$), Inverted duct papilloma ($n = 2$), Paraganglioma ($n = 2$), Plexiform neuroma ($n = 2$), Basal cell papilloma ($n = 1$), Desmoplastic fibroma ($n = 1$), Ectomesenchymal chondromyxoid tumour ($n = 1$), Juvenile nasopharyngeal angiofibroma ($n = 1$), Mucosal neuroma ($n = 1$), Rhabdomyoma ($n = 1$), Trichofolliculoma ($n = 1$), Trichilemmoma ($n = 1$).

**Table 8** Periodontal and gingival pathology

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Fibrous epulis[a] | 955 | 352 | 602 | 0.58 | 42.3 (15.9) | 39.4 |
| Pyogenic granuloma[a] | 771 | 326 | 443 | 0.74 | 46.5 (18.2) | 31.8 |
| Chronic gingivitis[a] | 275 | 129 | 145 | 0.89 | 42.5 (15.6) | 11.4 |
| Peripheral giant cell granuloma[a] | 135 | 52 | 81 | 0.64 | 48.9 (15.9) | 5.6 |
| Periodontitis | 130 | 66 | 64 | 1.03 | 42.1 (13.6) | 5.4 |
| Pericoronitis | 63 | 36 | 27 | 1.33 | 36.9 (15.3) | 2.6 |
| Lateral periodontal abscess | 28 | 16 | 12 | 1.33 | 43.8 (12.0) | 1.2 |
| Gingival abscess | 20 | 13 | 7 | 1.86 | 43.5 (14.4) | 0.8 |
| Dilatin (epanutin) hyperplasia | 15 | 9 | 6 | 1.50 | 37.9 (12.5) | 0.6 |
| Nifedipine hyperplasia | 12 | 11 | 1 | 11.00 | 54.1 (13.8) | 0.5 |
| Cyclosporin hyperplasia | 8 | 7 | 1 | 7.00 | 43.5 (14.9) | 0.3 |
| Fibromatosis gingivae | 7 | 3 | 4 | 0.75 | 30.6 (11.6) | 0.3 |
| Acute gingivitis | 1 | 1 | 0 | 0.00 | 19.0 (0.0) | 0.0 |
| Juvenile periodontitis | 1 | 0 | 1 | 0.00 | 17.0 (0.0) | 0.0 |
| Total | 2421 | 1021 | 1394 | 0.73 | | |

[a]In some cases the sex of the patient is unknown.

indirectly comparable studies are based on US populations of all ages. Rossi and Hirsch (17) presented 4793 lesions over a 20-year period; however, with the exception of malignant disease, no specific diagnoses were provided. The number of cases in the studies by Weir et al. (18) and Bhaskar (19), who presented 15 783 and 20 575 cases, respectively, is similar to the present study; however, Weir et al. and Bhaskar only presented the most common diagnoses and selective diagnostic categories. An additional study by Tay (20) included 2057 cases over a 5-year period from a Singaporean population.

*Dental related and periodontal pathology (Tables 4 and 8)*

Chronic periapical granulomas were one of the most common histological diagnoses, accounting for 8.1% of all specimens. This is a substantially lower percentage than that found by Bhaskar (19), but similar to that reported by Weir et al. (18), Tay (20) and

**Table 9** Malignant disease

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Squamous cell carcinoma[a] | 1559 | 986 | 571 | 1.73 | 64.2 (12.9) | 66.1 |
| Non-Hodgkin's lymphoma | 119 | 61 | 58 | 1.05 | 62.3 (14.6) | 5.0 |
| Basal cell carcinoma | 103 | 60 | 43 | 1.40 | 67.9 (12.9) | 4.4 |
| Carcinoma *in situ* | 102 | 64 | 38 | 1.68 | 61.2 (14.8) | 4.3 |
| Metatsatic carcinoma | 67 | 43 | 24 | 1.79 | 59.6 (13.5) | 2.8 |
| Mucoepidermoid carcinoma | 65 | 25 | 40 | 0.63 | 50.4 (17.5) | 2.8 |
| Adenoid cystic carcinoma | 62 | 25 | 37 | 0.68 | 59.1 (11.4) | 2.6 |
| Adenocarcinoma | 35 | 16 | 19 | 0.84 | 62.9 (13.9) | 1.5 |
| Malignant melanoma | 28 | 10 | 18 | 0.59 | 61.0 (15.5) | 1.2 |
| Adenocarcinoma (salivary) | 25 | 9 | 16 | 0.56 | 57.9 (14.9) | 1.1 |
| Anaplastic malignant tumour | 29 | 20 | 9 | 2.22 | 59.4 (15.3) | 1.2 |
| Osteosarcoma[a] | 18 | 10 | 7 | 1.43 | 44.7 (21.2) | 0.8 |
| Verrucous carcinoma | 16 | 6 | 10 | 0.60 | 67.3 (5.2) | 0.7 |
| Polymorphous low grade adenocarcinoma | 12 | 3 | 9 | 0.33 | 58.2 (10.6) | 0.5 |
| Carcinoma – undifferentiated | 10 | 6 | 4 | 1.50 | 66.2 (11.4) | 0.4 |
| Acinic cell carcinoma | 8 | 3 | 5 | 0.60 | 57.6 (26.4) | 0.3 |
| Carcinoma – in pleomorphic salivary adenoma | 8 | 6 | 2 | 3.00 | 63.1 (9.4) | 0.3 |
| Hodgkin's lymphoma | 8 | 6 | 2 | 3.00 | 41.5 (18.8) | 0.3 |
| Malignant giant cell tumour | 7 | 4 | 3 | 1.33 | 46.1 (18.1) | 0.3 |
| Myeloma – multiple | 7 | 2 | 5 | 0.40 | 59.3 (11.4) | 0.3 |
| Fibrosarcoma | 6 | 3 | 3 | 1.00 | 53.7 (19.9) | 0.3 |
| Kaposi sarcoma | 6 | 5 | 1 | 5.00 | 38.7 (7.9) | 0.3 |
| Leukaemia | 6 | 3 | 3 | 1.00 | 59.0 (17.5) | 0.3 |
| Plasmacytoma | 6 | 5 | 1 | 5.00 | 58.0 (12.7) | 0.3 |
| Angiosarcoma | 5 | 2 | 3 | 0.67 | 49.2 (18.1) | 0.2 |
| Leiomyosarcoma | 5 | 3 | 2 | 1.50 | 49.2 (13.9) | 0.2 |
| Others[b] | 38 | | | | | 1.6 |
| Total | 2360 | 1430 | 947 | 1.51 | | |

[a]In some cases the sex of the patient is unknown.
[b]Chondrosarcoma ($n = 3$), Epithelial myoepithelial carcinoma ($n = 3$), Haemangioendothelioma ($n = 3$), Pilar carcinoma ($n = 3$), Ameloblastic carcinoma – sarcoma ($n = 2$), Ewing's tumour ($n = 2$), Haemangiopericytoma ($n = 2$), Langerhans cell histiocytosis ($n = 2$), Liposarcoma ($n = 2$), Malignant odontogenic tumour ($n = 2$), Olfactory neuroblastoma ($n = 2$), Rhabdomyosarcoma ($n = 2$), Undifferentiated carcinoma of salivary gland ($n = 2$), Wegner's granulomatosis ($n = 2$), Parosteal osteosarcoma ($n = 1$), Spindle cell carcinoma ($n = 1$), Merkel cell carcinoma ($n = 1$), Myoepithelial carcinoma ($n = 1$), Salivary duct carcinoma ($n = 1$), Sebaceous epithelioma ($n = 1$).

**Table 10** Bone pathology

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Osteoarthrosis | 232 | 48 | 184 | 0.26 | 25.2 (12.8) | 22.6 |
| Exostosis | 167 | 67 | 100 | 0.67 | 50.6 (15.2) | 16.3 |
| Sequestrum | 125 | 79 | 46 | 1.72 | 47.6 (16.9) | 12.2 |
| Periostitis | 92 | 41 | 51 | 0.80 | 52.1 (12.7) | 9.0 |
| Central giant cell granuloma | 64 | 19 | 45 | 0.42 | 39.9 (17.1) | 6.2 |
| Osteitis | 54 | 27 | 27 | 1.00 | 51.4 (14.0) | 5.3 |
| Osteomyelitis | 54 | 36 | 18 | 2.00 | 50.6 (14.1) | 5.3 |
| Bone sclerosis | 39 | 17 | 22 | 0.77 | 39.7 (19.9) | 3.8 |
| Fibrous dysplasia | 39 | 20 | 19 | 1.05 | 34.2 (12.0) | 3.8 |
| Osteoradionecrosis | 37 | 28 | 9 | 3.11 | 60.3 (12.7) | 3.6 |
| Ossifying/cementifying fibroma | 30 | 6 | 24 | 0.25 | 39.3 (12.1) | 2.9 |
| Condylar hyperplasia | 29 | 10 | 19 | 0.53 | 26.0 (8.1) | 2.8 |
| Paget's disease | 19 | 9 | 10 | 0.90 | 60.8 (13.4) | 1.9 |
| Hyperparathyroidism | 10 | 2 | 8 | 0.25 | 45.7 (20.3) | 1.0 |
| Others[a] | 35 | | | | | 3.4 |
| Total | 1026 | 429 | 597 | 0.72 | | |

[a]Ankylosis ($n = 6$), Rheumatoid arthritis ($n = 6$), Eosinophilic granuloma ($n = 5$), Coronoid hyperplasia ($n = 4$), Cleidocranial dysostosis ($n = 3$), Synovial chondormatosis ($n = 3$), Dialysis dystrophy ($n = 2$), Osteopetrosis ($n = 2$), Synovitis ($n = 2$), Juxta-articular bone cyst ($n = 1$), Pseudohypoparathyroidism ($n = 1$).

Thompson (22). Periapical pathology in the form of chronic periapical granuloma, radicular and residual cysts, collectively comprised the largest diagnostic group with 7340 cases, or 16.7% of all submitted specimens.

Localized swellings of the gum (epulides), represented mainly by fibrous epulis and pyogenic granuloma/pregnancy epulis, comprised approximately 4.0% of all submitted specimens. This is similar to that found by Weir et al. (18), Bhaskar (19) and Thompson (22).

**Table 11** Connective tissue pathology

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Haemangioma – cavernous[a] | 308 | 159 | 147 | 1.08 | 55.4 (15.5) | 45.0 |
| Haemangioma – capillary | 185 | 75 | 110 | 0.68 | 51.4 (17.8) | 27.0 |
| Vascular anomaly | 85 | 41 | 44 | 0.93 | 52.7 (17.9) | 12.4 |
| Hamartoma – unclassified | 54 | 28 | 26 | 1.08 | 48.9 (18.5) | 7.9 |
| Intravascular papillary endothelial hyperplasia | 17 | 13 | 4 | 3.25 | 46.1 (15.5) | 2.5 |
| Amyloid | 15 | 7 | 8 | 0.88 | 64.4 (13.2) | 2.2 |
| Phlebolith | 6 | 1 | 5 | 0.20 | 33.8 (11.9) | 0.9 |
| Nodular fasciitis | 4 | 0 | 4 | 0.00 | 45.5 (17.6) | 0.6 |
| Vasculitis | 4 | 3 | 1 | 3.00 | 59.5 (9.3) | 0.6 |
| Myositis | 3 | 1 | 2 | 0.50 | 46.3 (2.6) | 0.4 |
| Haemangioma – epithelioid | 1 | 0 | 1 | 0.00 | 23.0 (0.0) | 0.1 |
| Scleroderma | 1 | 0 | 1 | 0.00 | 27.0 (0.0) | 0.1 |
| Xanthogranuloma | 1 | 1 | 0 | 0.00 | 70.0 (0.0) | 0.1 |
| Total | 684 | 329 | 353 | 0.93 | | |

[a]In some cases the sex of the patient is unknown.

**Table 12** Non-odontogenic cysts

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Nasopalatine cyst | 237 | 157 | 80 | 1.96 | 48.3 (15.4) | 40.7 |
| Epidermoid cyst | 172 | 127 | 45 | 2.82 | 42.5 (16.1) | 29.6 |
| Lymphoepithelial cyst – oral | 46 | 23 | 23 | 1.00 | 44.9 (13.9) | 7.9 |
| Lymphoepithelial cyst – branchial | 24 | 11 | 13 | 0.85 | 33.0 (12.5) | 4.1 |
| Nasolabial cyst | 20 | 3 | 17 | 0.18 | 51.3 (14.9) | 3.4 |
| Dermoid cyst | 19 | 18 | 1 | 18.00 | 44.6 (16.1) | 3.3 |
| Cyst – undetermined origin | 18 | 12 | 6 | 2.00 | 44.4 (15.1) | 3.1 |
| Solitary (traumatic) bone cyst | 17 | 8 | 9 | 0.89 | 34.1 (16.8) | 2.9 |
| Antral cyst | 16 | 9 | 7 | 1.29 | 50.4 (16.9) | 2.7 |
| Aneurysmal bone cyst | 7 | 4 | 3 | 1.33 | 34.7 (11.8) | 1.2 |
| Thyroglossal duct cyst | 4 | 2 | 2 | 1.00 | 27.3 (3.6) | 0.7 |
| Epithelial inclusion cyst | 2 | 0 | 2 | 0.00 | 32.0 (1.0) | 0.3 |
| Total | 582 | 374 | 208 | 1.80 | | |

**Table 13** Odontogenic tumours

| *Diagnosis* | *Number* | *Male* | *Female* | *M:F ratio* | *Mean age (SD) (years)* | *Percentage of group* |
|---|---|---|---|---|---|---|
| Ameloblastoma | 102 | 48 | 54 | 0.89 | 47.5 (19.1) | 30.8 |
| Odontome – complex | 48 | 32 | 16 | 2.00 | 31.2 (13.7) | 14.5 |
| Cemento-osseous dysplasia | 34 | 7 | 27 | 0.26 | 54.6 (13.3) | 10.3 |
| Odontome – compound | 31 | 17 | 14 | 1.21 | 29.4 (12.8) | 9.4 |
| Cementoblastoma | 20 | 6 | 14 | 0.43 | 40.8 (18.4) | 6.0 |
| Odontogenic myxoma | 20 | 11 | 9 | 1.22 | 33.1 (13.7) | 6.0 |
| Calcifying odontogenic cyst | 16 | 11 | 5 | 2.20 | 51.6 (17.9) | 4.8 |
| Odontome – other | 15 | 5 | 10 | 0.50 | 29.6 (8.0) | 4.5 |
| Calcifying epithelial odontogenic tumour | 13 | 6 | 7 | 0.86 | 41.6 (16.0) | 3.9 |
| Adenomatoid odontogenic tumour | 6 | 2 | 4 | 0.50 | 38.2 (16.3) | 1.8 |
| Odontogenic gingival epithelial hamartoma | 7 | 7 | 0 | 0.00 | 30.6 (10.9) | 2.1 |
| Odontogenic fibroma | 4 | 0 | 4 | 0.00 | 53.5 (12.6) | 1.2 |
| Odontogenic hamartoma | 4 | 4 | 0 | 0.00 | 51.5 (15.9) | 1.2 |
| Odontome – dens in dente | 4 | 2 | 2 | 1.00 | 35.3 (14.9) | 1.2 |
| Odontome – developing | 3 | 1 | 2 | 0.50 | 28.0 (8.0) | 0.9 |
| Unclassified mixed odontogenic tumour | 2 | 0 | 2 | 0.00 | 64.5 (10.5) | 0.6 |
| Ameloblastic fibro – odontome | 1 | 1 | 0 | 0.00 | 17.0 (0.0) | 0.3 |
| Squamous odontogenic tumour | 1 | 1 | 0 | 0.00 | 83.0 (0.0) | 0.3 |
| Total | 331 | 161 | 170 | 0.95 | | |

*Mucosal pathology (Table 2)*

Fibrous hyperplasia in the form of a fibro-epithelial polyp was the most common diagnosis with 6458 cases, making up 14.7% of all reported specimens. This is a similar finding to that of Weir et al. (18); however, others have reported a substantially lower percentage of

**Table 14** Frequent histological diagnoses 1973–2002

| *Diagnosis* | *Number* | *Percentage* |
|---|---|---|
| Fibrous hyperplasia | 6458 | 14.7 |
| Chronic periapical granuloma | 3547 | 8.1 |
| Radicular cyst | 3229 | 7.3 |
| Lichen planus | 2973 | 6.8 |
| Hyperkeratosis | 2481 | 5.6 |
| Squamous cell carcinoma | 1559 | 3.5 |
| Mucous extravasation cyst | 1502 | 3.4 |
| Squamous papilloma | 1320 | 3.0 |
| Epithelial dysplasia | 1280 | 2.9 |
| Dentigerous cyst | 1081 | 2.5 |
| Fibrous epulis | 955 | 2.2 |
| Non-specific ulceration | 919 | 2.1 |
| Non-diagnostic | 894 | 2.0 |
| Chronic sialoadenitis | 864 | 2.0 |
| Pyogenic granuloma | 771 | 1.8 |
| Scar tissue | 699 | 1.6 |
| Odontogenic keratocyst | 591 | 1.3 |
| Residual cyst | 564 | 1.3 |
| Mucosal inflammation (non-specific) | 518 | 1.2 |
| Granulation tissue | 450 | 1.0 |
| Total | 32 655 | 74.2 |

cases (19, 22). Lichen planus, epithelial dysplasia and chronic hyperplastic candidosis were more common in our study compared with studies from the USA (18, 19, 22). Hyperkeratosis was the fifth most common lesion representing 5.6% of specimens; similar findings have been reported in previous studies (17, 21).

*Cystic lesions (Tables 3 and 12)*
Both odontogenic and non-odontogenic cysts were more prevalent in male patients. However, in our study the male:female ratio with radicular cysts is roughly equal (1.1:1); we also found a predominance of developmental cysts such as odontogenic keratocysts in male patients. Radicular cysts were the most common diagnosis in this category with 3229 (7.3% of all specimens) cases. Similar results have been reported in studies from Singapore (20), Mexico (10, 23), Canada (11), Germany (24) and the USA (19). Odontogenic keratocysts comprised 9.8% of odontogenic cysts; this is substantially higher than reported by Bhaskar (19) and lower than those found in Mexican (10, 23) and Singaporean populations (20). Odontogenic keratocysts previously included both para- and orthokeratinized cysts. According to the new WHO classification (25), these cysts have now been reclassified as keratocystic odontogenic tumours and jaw cysts with keratinization respectively. For the sake of comparison we have maintained the previous classification system (26). Sialo-odontogenic cysts were first reported in 1992 (27) and in the past, have been reported under numerous synonyms including glandular odontogenic and polymorphous cysts. The latter term indicates the various histological appearances of these cysts (28). We identified 10 sialo-odontogenic cysts, although the true number is likely to be greater because of our use of alternative classifications prior to 1992.

*Miscellaneous category (Table 5)*
To facilitate organization of the data, the miscellaneous group (Table 5) essentially comprised a range of diagnoses that could not easily be placed into any other diagnostic category. Although we code infective disease separately, for convenience, they are included under the miscellaneous group. These specimens accounted for 9% of all adult cases. Of the 3974 cases, 894 (22.5%) were non-diagnostic. These cases (2% of all submitted specimens) were usually either too small or inadequate in someway for accurate reporting to be carried out.

*Benign tumours (Table 7)*
The ratio of benign-to-malignant tumours is approximately 1:1. A large proportion of benign lesions comprised squamous papillomas (3.0% of all specimens); however, if these common lesions are discounted then benign tumours are relatively rare. With the exception of squamous papillomas, salivary tumours are the most common diagnostic group with 440 cases (1.0% of all specimens). Pleomorphic salivary adenoma was the most common benign salivary tumour with 303 cases, followed by monomorphic adenoma; this is similar to the findings in other studies (14, 29–31).

*Malignant tumours (Table 9)*
In previous studies, it has been estimated that between 1.7% and 2.6% (17–19, 22) of all cases in a reported series are malignant; however, in our data the number of malignant cases is substantially higher at 5.4% and similar to those found by Tay (20). SCC accounted for nearly two-thirds of all malignancies and was the sixth most common diagnosis occurring more frequently than mucous extravasation cysts, squamous papillomas and epithelial dysplasia. In our study, SCC accounted for 3.5% of all diagnoses; this is substantially greater than figures reported from the USA, where there is a fairly consistent range between 0.7% and 1.7% (17–19, 22). A possible reason for the apparent difference between the UK and the USA is that in the USA, the oral pathology service is mainly provided to general and specialist dental practitioners (32). Our local Department of Oral and Maxillofacial Surgery acts as a regional referral centre and hence this will undoubtedly influence the particular types of specimens that we receive.

A total of 184 malignant salivary gland tumours were found, making up 7.8% of all malignancies and 0.4% of all diagnoses. Eveson and Cawson studied 2356 salivary tumours (excluding unknown lesions) and found 60 mucoepidermoid and 124 cases of adenoid cystic carcinoma that accounted for 2.6% and 5.3%, respectively, of all salivary tumours (31). This is substantially less than our data of 10.4% and 9.9% respectively. In addition, our ratio of benign-to-malignant tumours was lower than that found in Eveson and Cawson's study (2.4:1 and 4.6:1 respectively). In studies from other populations, it has been reported that there is a marked predominance of mucoepidermoid carcinoma over adenoid cystic carcinoma (14, 33) while another group has shown a similar distribution to that found in Eveson and Cawson's study (34).

In general, males were more commonly affected by malignant disease than females (male:female ratio 1.5:1); however, malignant salivary tumours predominantly affected females (male:female ratio 0.7:1).

*Odontogenic tumours (Table 13)*

Odontogenic tumours, accounted for only 0.8% ($n = 331$ cases) of all submitted specimens; this is similar to that found in previous reports (11, 35) and tends to confirm that these lesions are rare. Bhaskar (19) reported a preponderance of odontogenic tumours at 2.37% of all submitted specimens. Kim and Ellis (36) reported that of 847 cases referred to the Armed Forces Institute of Pathology; only 53.4% (460 cases) were correctly identified as dental follicles and/or dental papillae; common misdiagnosis included odontogenic myxoma and other odontogenic tumours. The study by Kim and Ellis emphasized the importance of referral of such lesions to an oral and maxillofacial pathologist.

The distribution of ameloblastoma and odontomes is similar to that found by Tay (20) but different from other studies; for example, ameloblastomas are more common in Chinese (12) and African (13) populations whereas odontomas appear to be more common in Canada (11), Mexico (23) and Chile (37). Adenomatoid odontogenic tumour (AOT), a diagnosis most commonly made in the paediatric population, accounted for six specimens (mean age 38 years, range 17–61). We have previously published data (6) on paediatric patients (16 years and under) in which we reported 10 AOTs with a mean age of 13 years (range 9–16).

## Summary

The range of diagnosed specimens from adult populations is diverse and our results should be of interest to pathologists, oral and maxillofacial surgeons, specialist practitioners and general dental practitioners. The results do not represent the actual prevalence of oral and maxillofacial disease within the general population, but simply reflect the frequency of histologically diagnosed lesions in a UK population. This survey has shown that most diagnoses are benign in nature and often require no further surgical management. However, a large proportion of cases such as dysplasia, lichen planus, mucous membrane pemphigoid and odontogenic keratocysts require long-term treatment. Approximately one in 19 cases required major surgery for malignant disease. Also, SCC was more common than epithelial dysplasia with a ratio of 1.2:1.

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