PRIMARY CARE DERMATOLOGY

An audit of case selection and a comparison with secondary care

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With the advent of practice-based commissioning, primary care clinicians have an opportunity to expand their role in the management and treatment of dermatological lesions. This audit provides a comparison of primary and secondary care in regard of appropriateness of treatment, diagnostic accuracy and cost implications of increasing the burden of dermatological procedures performed in primary care. Justin Farthing is a medical student who worked at the Dalton Square Practice in Lancaster, a city centre practice with 13,000 patients from urban and rural locations and eight general practitioners (GPs). Dr David Longden, a principal at Dalton Square, has a special interest in dermatology.

Audit Standard for dermatology operations in primary care (Longden 2001)

The postoperative infection rate should be less than 5%

The percentage of lesions proving malignant on histological examination should be less than 2.5%

INTRODUCTION

The introduction of the General Practice Contract⁽¹⁾ in 1990 set a precedent whereby financial inducements were offered to encourage GPs with an interest in dermatology to provide a minor surgery service to their patients. The financial inducements, however, only allowed for a limited service to be offered and it was not until comparatively recently that Primary Care Trusts (PCTs) have appreciated the potential of expanding this service as a cost-effective, patient-friendly method of reducing the workload on secondary care dermatology departments.

Whilst it is possible for GPs to improve their knowledge via an expanding selection of training courses and literature as regards minor surgery, much discussion in the medical press has focussed on the appropriateness of this service within primary care⁽³⁾. Essentially, this centres on the ability of GPs to recognise and correctly treat a variety of skin lesions and how this service dovetails with the established service offered by dermatologists in secondary care.

This study is based on an already established audit cycle. As well as reviewing the case mix as regards benign and non-benign lesions treated, infection rates and completeness of excision (non-benign lesions), this study focuses on the clinical diagnostic ability of an experienced GP in primary care in comparison with that of his secondary care counterparts, via the clinical details provided on histopathology reports for minor operations performed in secondary care.

Overall, the study attempts to assess the appropriateness of further expansion of minor surgery within primary care by providing evidence that it is possible to achieve equivalent results to secondary care with regard to quality of service, cost effectiveness and patient satisfaction.

RATIONALE AND AIM OF STUDY

Currently, the practice is being encouraged by the PCT to expand the number of minor operations performed at the surgery by accepting referrals from neighbouring practices.

The aim of this study is to assess whether the current service is appropriate for primary care, in terms of range and types of lesions excised, diagnostic accuracy and infection rates recorded. Comparisons are subsequently made with the performance of specialists at the Royal Lancaster Infirmary (RLI) dermatology department, whilst also providing mention of associated reimbursement costs and patient waiting times.

METHODS

The audit protocol adopted for this project concerned the infection rate recorded post excision and the number of malignant lesions excised in the practice.

A search was conducted using the practice database to analyse all the minor operations performed at Dalton Square during 2004. As well as the standards derived from the established audit it was decided to expand the remit of the study to assess the variety of skin lesions excised and the level of correlation between clinical and histological diagnosis. Histology reports of all skin lesions sent to the Lancaster pathology laboratory for the first six months of 2005 were assessed for the range of skin lesions referred, the level of agreement between clinical and histological diagnosis, the type of excision method used and whether excision was satisfactory.

To enable comparison to be made in regard of infection rates between Dalton Square and the RLI, patients with suspected basal cell carcinoma (BCC), squamous cell carcinoma (SCC) and malignant melanoma referred during the years 2001–2004 were followed up on the practice database for any evidence of postoperative infection that required antibiotics.

To assess other aspects of the minor surgery service, representations were made to the outpatient and finance departments to ascertain current waiting times and reimbursement rates.

A Medline search was conducted for relevant literature, which was subsequently collated from the library resources of the RLI and Liverpool University.

RESULTS

Compliance with audit standard

Infections requiring antibiotics:	4 cases, giving a rate of 2.5% (within the limits of the audit standard)
Diagnosis of malignancy:	2 BCC, 5 SCC, 1 dysplastic mole (a total of 8 cases) giving a rate of 5%

One hundred and fifty-seven lesions were removed in the study period – the histological diagnosis is given in table 1.

The discrepancy between the audit standard for malignancy (2001) and the results is easily explained. Over the years 2001–2005 the operator's confidence improved and he was able to excise certain malignant lesions. The original standard was intended to check that the vast majority of suspected malignancies were being referred to hospital.

Lesion	Number recorded and (misidentified)	Lesion	Number recorded and (misidentified)
Seborrhoeic wart	40 (8)	SCC	5 (4)
Sebaceous cyst	22 (2)	Actinic keratosis	2 (2)
Skin tag	17 (3)	Lipoma	3 (1)
Compound naevus	11 (2)	Nodular prurigo	1 (1)
Pigmented naevus	1 (0)	Gouty tophus	1 (1)
Intradermal naevus	20 (13)	Ecrrine poroma	1 (1)
Junctional naevus	1 (0)	Metastatic node Ca	1 (0)
Squamous papilloma	10 (10)	Neurofibroma	2 (2)
Dermatofibroma	7 (3)	Keloid	1 (1)
Keratoacanthoma	2 (1)	Keratin Horn	2 (0)
Capillary haemangioma	3 (2)		
Blue naevus	1 (0)		
Dysplastic compound naevus	1 (0)		
BCC	2 (1)	TOTALS	157 (58)

Table 1 Lesions excised at the Dalton Square surgery in 2004, with clinical and histological correlation

Lesion	Number recorded and (misidentified)	Lesion	Number recorded and (misidentified)
BCC	50 (10)	Junctional naevus	4 (0)
Actinic keratosis	34 (13)	Squamous papilloma	4 (2)
SCC	16 (1)	Dermatofibroma	4 (1)
Melanoma	5 (1)	Lentigo	4 (2)
Bowen's disease	7 (0)	Eczema	5 (2)
Seborrhoeic wart	20 (5)	CDNH	4 (1)
Compound naevus	11 (0)	NAD	5 (5)
Intradermal naevus	13 (3)	Other lesions*	32 (15)
Naevi (unspecified)	7 (0)		
		TOTALS	225 (61)

Table 2 Lesions excised in secondary care (RLI)
(CDNH = chondrodermatitis nodularis helicus
NAD = nothing abnormal detected)

*Ulcer, Inflammation, Lichen planus, Granuloma annulare, Vasculitis, Hyperplasia, Pemphigoid, Ephelia, Erythema gyratum, Angiokeratoma, Pyogenic granuloma, Pre-tibial myxoedema, Epidermal cyst, Balanitis xerotica obliterans, Secondary cancer, Haemangioma, Lichen sclerosis, Human papilloma virus, Fibrosis, Fibroepithelial polyp (skin tag), Neurofibroma

The number of lesions removed in secondary care for the first six months of 2005 was 225. The commonest lesions excised were BCC, actinic keratoses, SCC and seborrhoeic warts. In total, 61/225 (27%) were incorrectly identified clinically, compared to 58/157 (37%) of those in primary care (table 2).

The number of malignant lesions excised in secondary care was 31% (50 BCC, 16 SCC, 5 malignant melanoma); this compares to 5% at Dalton Square (figure 5). A further 18% (34 actinic keratoses, 7 Bowen's disease) of pre-malignant lesions were treated in secondary care, compared to 1% (2 actinic keratoses) in primary care.

Of the malignancies, 7% of cases in secondary care were not suspected clinically, compared with 33% (3/9 cases) in primary care (figure 6).

The methods of excision used in secondary care are shown in figure 7. Of those lesions removed by ellipse or shave excision the number with reported 'incomplete excision' was 27/76 (36%). Where this applies to potentially malignant lesions BCC, SCC and malignant melanoma 11/71 (15%) were incompletely excised (figure 8). This includes 3/5 (60%) of malignant melanoma that were incompletely excised.

Of the potentially malignant lesions excised at Dalton Square (1 dysplastic mole, 1 BCC) on histology suggested further excision was required, but on wider excision histology no tumour was detected.

The postoperative infection rate as determined by requirement for antibiotics was 7/123 (6%) for secondary care, as compared with 2.5% at Dalton Square.

LIMITATIONS OF STUDY

1. Clinical information as regards diagnosis is not always entered on to histopathology forms. If a diagnosis is forwarded, it may only suggest a loose diagnosis such as 'benign lesion/benign mole'.
2. Larger sample sizes would generate a greater degree of accuracy, particularly with issues such as infection rates between primary and secondary care.

3. Conclusions reached after comparing the two groups should reflect the fact that the hospital group has already been screened by primary care and that the diagnosis in the hospital group may be more difficult.
4. The two sample groups studied are not directly comparable. The hospital population will have already have been filtered by primary care physicians. The hospital may see a more diagnostically challenging sample of lesions.

5. Ideally, this study would be able to include an analysis of all GPs performing dermatology minor operations. Similarly, it would be useful to ascertain the experience of doctor(s) filling in the histopathology forms at the pathology laboratory.
6. There are too few potentially malignant lesions excised in primary care to compare completeness of excision with the hospital.
7. It was not always clear from the notes whether a patient was suffering with a postoperative wound infection, although the caveat of a prescription of antibiotics was used to control for this.

2. Future studies should set specific standards for specific skin lesions such as seborrhoeic wart, sebaceous cyst, BCC, etc after agreement with stakeholders on the standard.
3. All lesions excised should have a clinical diagnosis (however tentative) prior to histological study.

SUMMARY OF RESULTS FOR MINOR OPERATIONS AT THE DALTON SQUARE SURGERY AND THE DERMATOLOGY DEPARTMENT (RLI)			
	Dalton Square		RLI
Malignant lesions excised	5%		31%
Malignant lesions not clinically suspected	33%		7%
Malignant lesions incompletely excised	0%		15%
Malignant melanoma incompletely excised	–		60% (3/5)
Postoperative infection rate	2.5%		6%
Commonest lesions excised	seborrhoeic wart (25%)	sebaceous cyst (14%)	BCC (22%)
	intradermal naevus (13%)	skin tag (11%)	actinic keratosis (15%)
			seborrhoeic wart (7%)
			SCC (7%)

Waiting times for minor operations can be variable for both Dalton Square and the dermatology department. For the former, 1–4 weeks to operation is the norm; for the latter, a standard of 8 weeks to initial consultation and 13 weeks for the operation is stated.

Costings: current reimbursement rate provided to primary care is £80 per excision biopsy. This compares to £105 billed for an 'outpatient episode in dermatology' or £544 billed for a 'minor skin procedure'.

Figure 9 Junctional naevus

SUGGESTIONS FOR FUTURE IMPROVEMENT

1. Future studies should use a larger sample size by including previous years' figures or, more appropriately, enrolling other local GPs .

Figure 10 Seborrhoeic wart

DISCUSSION

Since the introduction of the GP contract there has been a substantial increase in the number of specimens received at pathology laboratories. This cannot solely be attributable to increased primary care activity as numbers are rising for both primary and secondary care. It is thought that the increased proportion of the elderly in the population allied to a heightened awareness within the general public and fear of litigation has led to an increased incidence of skin malignancies recorded⁽³⁾. The fact that many dermatology departments are overstretched and understaffed provides the rationale to involve primary care physicians to use their experience and skills⁽²⁾.

Figure 11 Malignant melanoma

The priority for any physician presented with a skin lesion is to exclude malignancy and, aside from those patients pursuing minor surgical treatment for purely cosmetic reasons, this is usually at the forefront of the patient's mind. Such a task can present a problem due to the sheer variety of presentations of skin lesions and the variation in clinical experience to which doctors have been exposed⁽⁴⁾. The examples shown in figures 9,10 and 11 highlight the difficulties in clinical identification.

The majority of malignancies are, as one would expect, treated and managed in hospital⁽³⁾. This study found that 31% of the minor surgery workload in hospital comprised potentially malignant lesions (BCC, SCC and malignant melanoma) compared to 5% in the practice studied. A further 18% of skin lesions in secondary care were accounted for by the potentially pre-malignant conditions of actinic keratoses and Bowen's disease. The figure recorded at Dalton Square is an increase on previous years whereby all suspected malignant lesions were referred, in contrast to the current situation where the clinician feels sufficiently confident to manage some potentially malignant lesions at the surgery (note – it is still considered mandatory to refer all suspected malignant melanoma). Perhaps more pertinent to this discussion is the ability of physicians to identify skin lesions. Given that dermatology accounts for approximately 15% of consultations in general practice⁽⁴⁾ it seems surprising that the diagnostic accuracy for GPs reported in the literature is consistently poor^(4,5). Such errors in diagnosis can lead to incorrect management^(4,6) and a delay in effective treatment may convert an acute problem into a chronic one⁽⁴⁾.

Several studies have attempted to demonstrate the level of sensitivity of examinations performed by primary care clinicians for diagnosing skin cancer^(4,7,8). Whilst most highlight the low level of sensitivity, for example Cox *et al*⁽⁹⁾ showed only 50% of cutaneous malignancies diagnosed by GPs, others suggest comparable rates of diagnosis between primary and secondary care^(7,8). One study involving a 25-year retrospective analysis of all histopathologically-confirmed malignant melanoma diagnosed in a hospital dermatology department showed that a firm clinical diagnosis of malignant melanoma was only made in 98 of 238 specimens, although a malignant or pre-malignant condition was suspected in 204⁽¹⁰⁾, and when the investigators looked at all malignancies diagnosed, only 7% of cases were not suspected of being malignant. This compares with 33% of cases of proven malignancy which were not suspected in primary care (albeit small numbers – nine cases in total). Generally the body of opinion as expressed in the literature as it stands would appear to argue strongly against GPs becoming routinely involved in the surgical diagnosis of malignancies. Of those potentially malignant diagnoses misidentified in this study, the differentiation of SCC and actinic keratoses seems most problematic. These lesions should not be thought of as separate entities, indeed there often exists a 'grey area' in-between histological diagnoses – hence the proportion of those misidentified by secondary care in this study. Similarly, of the five SCC recorded in primary care in 2004, four of these were misdiagnosed as a variety of benign lesions such as pyogenic granuloma, dermatofibroma and keratoacanthoma; again highlighting the diversity of presentation.

Despite the diagnostic uncertainty of GPs reported in the literature, it is reassuring that there is still a clear distinction between the largely benign nature of cases dealt with in primary care and the more serious potentially malignant cases recorded in secondary care. The commonest lesions removed in primary care were seborrheic warts, sebaceous cysts, intradermal naevi and skin tags. Where lesions were misidentified this was probably more a factor of limited clinical information provided, probably due to the perceived benign nature of the lesions. This is particularly the case in the recording of intradermal naevi and squamous papilloma. That there were no detrimental consequences to the patient because of the diagnosis is of far greater importance than the nomenclature used.

Perhaps not surprisingly, researchers have found the diagnostic abilities of GPs to be inferior to that of their

secondary care colleagues in the diagnosis of benign skin lesions, with correct diagnoses as low as 26% (varying between 26%–58%)^(4,8,9,11). That said, it has been demonstrated by Sladden and Graham-Brown^(4,12) that 26% of new referrals to a dermatology clinic could be dealt with by a GP with three months experience of working in a dermatology department. Of course, it will always be desirable for GPs to have recourse to consultant opinion, if only for reassurance in diagnosis or guidance on treatment.

Much of the unease surrounding diagnostic uncertainty is lessened by the practice of sending all excised specimens for histological assessment. Such a practice is advocated in guidelines issued jointly by the General Medical Services Committee, the Royal College of General Practitioners, the Royal College of Surgeons and the Joint Committee on Postgraduate Training for General Practice in 1991⁽¹³⁾. It has been stated that the proportion of tissue samples currently being sent for histological examination in the Lancaster area is around 40%⁽³⁾. This practice is strictly adhered to by the practice under study. However, the benefits of adherence to this policy go beyond the reassurance of diagnosis. The insurance cover by the Medical Defence Union (MDU) for safeguarding the doctor from litigation only protects the doctor performing excision biopsies. It does not provide indemnity cover for minor operations performed for cosmetic reasons. To expand the service to include cosmetic lesions, the GP would have to pay a further £5,000 in MDU fees – a sizeable financial disincentive. Hence biopsies are performed on all lesions.

On the rare occasions when patients have benign lesions removed and subsequently years later the patient returns with a malignant lesion having developed at a similar site, the doctor is able to produce the pathology report proving the benign nature of the original lesion. Fear of litigation shapes current practice.

The obligation of pathological examination has provided a substantial increase in laboratory workload, and there have been conflicting studies regarding whether this has delivered corresponding benefits to patients⁽¹¹⁾. Whilst several researchers have reported diagnostic errors and incomplete excision of malignant lesions by GPs^(11,14,15,16), other studies have shown that despite the increased workload undertaken by pathologists, all the extra specimens involved increases in benign lesions^(11,17). The inference is that the GPs were in fact detecting the majority of clinically important lesions and that sending all tissue specimens for histological diagnosis as a means of increasing detection of serious skin pathology was unlikely to be cost effective⁽¹¹⁾.

The methods used to excise lesions varied markedly between the hospital setting and the practice studied. Although it was not always possible to ascertain the methods used from the hospital pathology forms, it was clear that curettage and cautery, ellipse and shave excision and punch biopsy were used in equal measure; whereas in primary care the most popular techniques were ellipse and shave excisional methods. Some lesions, such as seborrheic warts and actinic keratoses, lend themselves to curettage, whilst shave excision is useful for benign popular moles. Sebaceous cysts are removed by shelling out the cyst complete. The best results are achieved when the clinician has a clear idea of the differential diagnosis⁽¹⁸⁾. Not knowing the pathology of the tissue can only lead to recurrences, which may require comparatively expensive interventions such as Moh's surgery rather than simpler procedures that can be used if the inadequacy of excision is discovered immediately.

Having selected a method of excision, it is important to be confident that any lesion excised is removed intact. This is really an issue regarding malignant lesions. However, as diagnostics are so problematic, a histologically complete excision should be the desired result. There may of course be circumstances where inadequacy of excision maybe acceptable – examples would be clinically benign skin lesions which, but for cosmetic reasons, the clinician would otherwise confidently advise the patient to leave alone.

The use of curettage makes the histological assessment of completeness of excision nigh on impossible, hence the use of cautery to try and destroy any remaining abnormal cells left behind. Cautery is a method currently being used successfully following attempted excision of potentially malignant lesions. Of those lesions excised, two came back with a histology suggesting further excision was required; however, on wide excision histology, no tumour was detected. Accurate record keeping is vital here, the notes recording that a wide area of cautery has been used and that the lesion has been dealt with successfully. The patient is informed to report any subsequent reoccurrence, which can then be referred for specialist opinion.

Unfortunately the pathology reports as regards the completeness of excision were not available for benign lesions in primary care. However, analysis of ellipse excisions performed at the RLI showed over a third of these were found to be incomplete. Of the potentially malignant lesions excised at the RLI, 15% were shown to be incomplete excisions, but of greater concern was the 60% (albeit only 3/5) of malignant melanoma which were incompletely excised. Whilst we were unable to compare excision rates between Dalton Square and the RLI, examination of the literature showed that GPs were less likely to provide complete excisions compared with their hospital colleagues⁽¹⁷⁾, although one study by Hillan *et al*⁽¹⁶⁾ suggests otherwise. To put this issue into perspective, O’Cathain *et al*⁽¹⁸⁾ showed that the risk of inadequate excision of a malignant lesion was about one in five hundred excisions by GPs. Fortunately, incomplete excision has no clinical consequences in most cases (all skin lesions), but complete excision in the first instance may avoid the need for further treatment.

One of the potential advantages of patients able to have minor surgery performed in primary care is a reduced risk of infection of the wound site. It has been shown that some practices in primary care have been slow to embrace minimum standards of care as regards infection control⁽¹⁹⁾, but this was not the case in the practice studied, where written policies on infection control combined with appropriate use of protective clothing, single use items and sterilisation of equipment were all much in evidence. As a result of these measures, the infection rate for minor operations for 2004 (as evidenced by the need for antibiotics) was 2.6%. This compares with a rate of 6% for a similar number of patients referred to the RLI and followed up by practice nurses during wound checks. There is a paucity of relevant information in this regard, with only two studies providing infection rates for GP minor operations varying between 0.2 and 1.2%^(17,18). The latter figure compared with a hospital infection rate of 1.9%. The fact that these seem surprisingly low may reflect on the method of data collection via postal questionnaires to patients, although it is of course impossible to rule out a genuinely low incidence of wound infection in these studies.

Another advantage of providing an expanded minor surgery service in primary care is the potential cost savings in comparison to persisting with the costs incurred through

secondary care. There are no recent published papers detailing potential cost savings in this area (the last paper that specifically dealt with this, was published in 1992 and prices bear little relation to reimbursement levels provided currently to primary care⁽¹⁸⁾). GPs are currently reimbursed £80 per minor operation performed (excluding skin tags), which is cheaper than the national tariff for an ‘outpatient episode in dermatology’ of £105. There is an even starker contrast when compared to the more likely invoiced tariff of ‘minor skin procedure’ priced at £544. Such figures have to be viewed in the context of facilities used and staff costs incurred; however, it is clear that there are substantial financial benefits to be gained by placing an increased emphasis on minor operations in general practice.

Although not strictly within the remit of this study, it is important to reflect on how patients might respond to having their minor operation performed by their local GP. As well as the reduced anxiety of having their operation performed by a known doctor in the familiar surroundings of their local surgery, there are also the more favourable waiting times all of which combine to enhance patient satisfaction. The current waiting list at the RLI is eight weeks for a consultation and 13 weeks for the operation itself. This compares with a four-week wait to operation in the practice, this being reduced to one week for suspected malignancy (not malignant melanoma). At present, a proportion of cases of suspected SCC and BCC are managed in primary care. If they are surgically challenging, they are referred in the ‘as soon as’ criteria, to be seen on average within 4–6 weeks and operated on 2–4 weeks later. Malignant melanomas come under the two-week rule of other fast growing cancers and are seen as a priority.

CONCLUSION

This study demonstrates that an experienced GP with an interest in dermatology is able to deliver a minor surgery service that is both efficient and cost effective.

The diagnosis of skin lesions remains problematic, although routine histological assessment provides a safety net to ensure any misdiagnoses are properly managed. As it is, the majority of malignant lesions in this study were managed and treated in secondary care, with primary care excising mostly benign lesions. The levels of incomplete excision recorded in secondary care would appear a concern, especially in those cases of malignant melanoma which were only partially removed.

Of particular relevance to the patient are the lower rates of infection recorded post operation in primary care, as compared with the hospital, as well as the reduced waiting time.

As a final note, the PCT may realise substantial cash savings by the promotion of minor surgery delivered in primary care, compared with the costs currently incurred by treatment in secondary care.

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