



# Minor surgery activity in primary care

Marta Serra<sup>1</sup> • Antonio Arévalo<sup>1</sup> • Cristina Ortega<sup>1</sup> • Ana Ripoll<sup>1</sup>  
• Nuria Giménez<sup>2</sup>

<sup>1</sup>Primary Care Center of Vallldoreix, Research Foundation Mútua Terrassa, University of Barcelona, Terrassa, Catalonia, Spain

<sup>2</sup>Research Unit, University Hospital of Mútua Terrassa, University of Barcelona, 08221 Terrassa, Catalonia, Spain

Correspondence to: Nuria Giménez. E-mail: ngimenez@mutuaterrassa.es

## DECLARATIONS

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NG and MS

### Contributorship

MS and NG

designed the study,

located and selected

studies, extracted,

analysed and

interpreted the

results, and wrote

the manuscript.

AA had the idea for

the study and wrote

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## Summary

**Objective** The aim of this study was to describe the activity in our Outpatient Minor Surgery unit during its first five-year period.

**Design** Retrospective descriptive study.

**Methods** It was carried out in two centres of a Basic Health Area with a catchment area of 73,000 inhabitants.

**Participants** Patients who underwent surgery from January 2002 to December 2007 were included in the research.

**Main outcome measures** Information on the sociodemographic data of the patients, characteristics of the lesions, risk factors, treatment and its complications was gathered.

**Results** A total of 2317 surgical procedures was performed on 1520 patients. The mean was 46 years old and 52% were men. The concordance between clinical and anatomopathological diagnosis was 81%. There were complications in 5% of them. The main pathologies were: epidermoid cysts (22%), nevus (20%) and fibromas (18%). They were mainly located in the back (24%), superior extremities (14%) and head (11%). In 73% mepivacaine was used as anaesthetic. The most current techniques used were: incision (36%), curettage (33%) and fusiform excision (28%). Less than 1% had malignant lesions, 50% of which were not diagnosed clinically. The mean waiting time was 30 days. Ninety-two percent had the informed consent.

**Conclusions** Minor surgery in primary care is feasible and has a good clinicopathological concordance and minimum complications, but some malignant lesions are overlooked in the diagnosis based exclusively on clinical criteria.

## Introduction

Minor surgery in primary care is a health benefit provided by the National Health Service whose implementation is still increasing. In Spain it is

still considered an innovative activity and our Minor Surgery Unit is a pioneer in our region.

Minor surgery is defined as those procedures which have as a common trait the application of surgical techniques, or other minimally-invasive

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procedures of a short duration, which are carried out through the superficial and/or approachable tissues. These techniques normally require a local anaesthetic and have few risks and complications.<sup>1,2</sup>

Minor surgery is widely established in primary care in English-speaking countries and in other European countries.<sup>3-5</sup> In Spain it is included as a health benefit of the National Health Service in the Primary Care field. The acceptance from the primary care team as well as patients increases with time and there is great variability regarding the number of operations.<sup>6</sup> Minor surgery is currently included in the Training Programme of the Specialty of Family Medicine.

Some of the benefits we noted of performing minor surgery in primary care are: cost-effectiveness for the system;<sup>3,7</sup> a greater accessibility for the patient; and a reduction in the waiting list for specialized attention, especially in general surgery and dermatology.<sup>4,6</sup> It has proved satisfactory for the patient as well as enriching, complementing and granting prestige to the activity carried out by the primary care doctor.

In general terms, the conditions surrounding minor surgery are similar in Spain as in the rest of the European countries. The main difference is that in Spain its practice does not imply an economic incentive.<sup>4,8</sup> The need of an initial investment in equipment and its maintenance is an essential requirement when starting a programme in minor surgery. In some cases this may be a disadvantage<sup>7</sup> even though expenses in surgical material in primary care result in being more cost-effective. As a result, it is necessary to adequately train professionals in both acquisition of the technical abilities and diagnostic approximation, due to the increased responsibilities for the doctor involved.<sup>5,9,10</sup>

The aim of this study was to analyse the activity carried out in one of the units of outpatient minor surgery (Ucima), a pioneer project in Spain in terms of management and volume of the activity, during its first five years of operation. The study analysed the characteristics of the patients consulted, lesions operated and the results obtained.

## Material and methods

We conducted a descriptive retrospective study from November 2002 to December 2007. The target group is obtained from the treatment

undergone by the patients in the Basic Health Area (BHA) in Sant Cugat. In 2004 this BHA catered for a population of 73,439 inhabitants and had two primary care centres (PCC): Sant Cugat and Valldoreix. The staff consisted of 26 general practitioners (GPs), nine paediatricians and one dermatologist.

Minor surgery in this BHA took place in a basic operating room located in the Valldoreix Primary Care Centre, where practically all the benign cutaneous surgery in the area was centralized by the initiative of the Primary care. Since 2002, it has been coordinated by a GP. On average, six procedures were performed every week in its first year. The team generally consisted of a GP, a nurse and an auxiliary nurse. Due to the increase in demand, the resources were increased gradually. These resources were mainly intended for Human Resources. There are currently three GPs, three graduates in Registered General Nurse (RGN) and one auxiliary nurse involved. Material resources of the unit include an operating room equipped with the necessary material. Since 2008, cryotherapy has also been available.

Based on data in the surgical record, the following information was gathered with these variables: sex, age, American Society of Anesthesiology (ASA) physical status classification,<sup>11</sup> source of the referral, number and location of the operated lesions, clinical and histological diagnosis, type of anaesthetic used, type of operation, intraoperative complications, waiting period and status of tetanus vaccination. The database was also completed with the compilation of the post-operative complications and the results of the anatomopathology. In order to do this, the computerized medical history of the patient was reviewed three weeks after surgery.

The location of the lesions was classified as: head, neck, trunk or extremities. The anaesthetic used was classified as: topical, with vasoconstrictors or without. Eutectic mixture of local anaesthetics (EMLA) and ethylene chloride was used as a topical anaesthetic. Lidocaine, mepivacaine and bupivacaine were used as anaesthetic without vasoconstrictor. In all the other cases of anaesthetic with vasoconstrictor, bupivacaine and adrenaline were used.

The International Classification of Illnesses, 9th revision, clinical modification (CIE-9-MC) was used in order to diagnose the lesions. All the

samples removed were sent to anatomopathology, excluding unnecessary pathologies: debridement of infected cysts, thrombosed hemorrhoids and ingrown nails.

Each of the activities performed in each of the patients' lesions was considered a surgical procedure. The present study was done in accordance with the Review Board and Ethics Committee of Mutua Terrassa.

The categorical variables are stated as numbers and percentages, and the continuous variables as mean  $\pm$  standard deviation (SD). We used the Kolmogorov-Smirnov test to check the normal distribution of the variables. The comparison of the variables was made by the  $\chi^2$  test for the categorical variables and the Student t test for the mean comparison. It was based on a bilateral approach with  $p < 0.05$  to establish the statistical significance. The analysis of the diagnosed concordance between clinical and anatomopathology was made by calculating the kappa index. The data were analysed with the SPSS statistical programme version 17.0. The calculation of the rates of the surgical procedures was made from the local census.

## Results

A total of 1520 patients attended, and a yearly average of 460 operations were performed. Ninety-seven percent of the patients were referred by their GP ( $n = 851$ ), 2% by the dermatologist ( $n = 14$ ), 1% by a pediatrician ( $n = 8$ ) and one by the surgeon. The progression of the rates of surgical procedures in minor surgery is shown in Figure 1. The lowest rates were obtained the same year the minor surgery unit was established. Hence, in 2003, for each 1000 inhabitants, 3.5 procedures in minor surgery were performed every week. From that point onwards, the number of operations increased, reaching its peak in 2006 by performing 8.3 operations in minor surgery for each 1000 inhabitants. It is worth pointing out that the rates were significantly higher in the primary care centre in which the welfare activity of the professionals of the minor surgery unit took place. The minor surgery procedures were 3% more frequent in the surgical group ( $n = 278$ ) than in the non-surgical group ( $n = 1206$ ) (95% CI 2–4). Three percent of operated patients came from PCC Valldoreix ( $n = 757$ ), 2% from the

office in La Floresta ( $n = 45$ ) and 2% from PCC Sant Cugat ( $n = 682$ ).

Eighty-six percent of patients consulted for single lesions ( $n = 1308$ ) and 14% for multiple lesions ( $n = 212$ ). A total of 2317 surgical procedures were performed. The mean waiting time was 28 days. The characteristics of the population are shown in Table 1: the mean age of the patients was 46 years; 52% ( $n = 783$ ) were men; 20 showed some cardiovascular risk factor ( $n = 299$ ); and 12% showed ASA II ( $n = 181$ ). Patients with multiple lesions had an average of 2.4 lesions and were on average 2 years older than those who showed a single lesion ( $p = 0.084$ ). No differences in sex were noted for presenting one or multiple lesions.

The results of the clinicopathological concordance of the lesions are shown in Table 2. In the overall sample, the percentage of coincidences diagnosed was 81%. There were excellent or good concordances for all the most frequent diagnoses. However, the less usual diagnoses were grouped in a miscellaneous section which shows a minor concordance. The concordance was poor in the malignant lesions. In this study, 10 malignant lesions have been included. One was diagnosed as basal cell carcinoma and, due to its characteristics, was decided to be removed in primary care. Four malignant lesions (one spinocellular carcinoma and three basal cell carcinomas) were initially diagnosed as premalignant lesions. Moreover, five lesions initially considered benign were anatomopathologically diagnosed as malignant (four basal cell carcinomas and one melanoma).

Table 3 shows the most frequent diagnosis: 12% ( $n = 277$ ) belonged to other types of lesion (molluscum contagiosum, hidradenitis, ganglion and common wart); 95% ( $n = 2201$ ) of the samples removed were sent to anatomopathology whereas the remaining 5% ( $n = 116$ ) were not deemed appropriate for this type of study. Three percent of surgical debridement of epidermoid infected cysts and abscesses ( $n = 70$ ), 2% of the procedures on ungual pathology (ingrown nails, onychomycosis and onychogryposis) ( $n = 44$ ) and two thrombosed hemorrhoids were performed.

The results of the anatomical distribution of the lesions and the type of anaesthetic used are shown in Figure 2.

The results concerning the surgical techniques used are broken down by type of lesion in

**Figure 1**  
Number of minor surgery procedures claimed for by GPs, and overall population in Sant Cugat del Valles and Valldoreix area, 2003–2007, claim rates per 1000 population

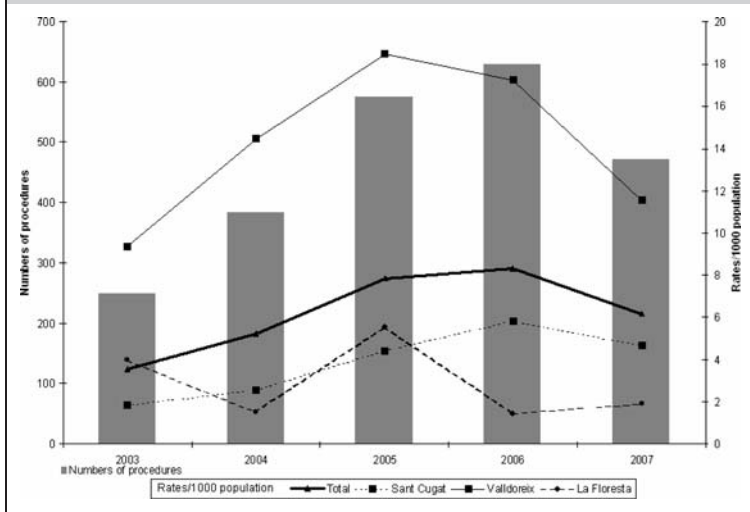


Table 3, where gender and age are detailed. The most widely used technique was incision in 36% of the cases ( $n = 829$ ), followed by curettage in 33% of cases ( $n = 759$ ) and the fusiform excision in 28% of cases ( $n = 648$ ). Other techniques such as debridement, total and partial excision of

nails and infiltrations were used in the remaining 81 cases.

Five percent of the procedures developed complications ( $n = 113$ ). There was 1% of intra-operative complications, all of them slight ( $n = 29$ ), and 4% postoperative complications ( $n = 84$ ). The intraoperative complications were: bleeding of the lesion ( $n = 14$ ); vasovagal episodes ( $n = 10$ ); and five cases of local reaction to anaesthesia. The post-procedure complications consisted of: infections ( $n = 57$ ); wound dehiscence ( $n = 10$ ); reactions to the suture ( $n = 7$ ); hematomas ( $n = 6$ ); and lesional erythemas ( $n = 4$ ).

Regarding the state of the tetanus vaccination in the population studied, 53% of patients were already duly vaccinated for tetanus ( $n = 804$ ). The 47% ( $n = 713$ ) who were not showed age but not gender differences. Those who were duly vaccinated for tetanus were on average 3 years younger than those who were not (95% CI 2–5 years). Ninety-nine percent ( $n = 711$ ) accepted being vaccinated after the minor surgery procedure, and 99% of the vaccinated population was reached ( $n = 1518$ ). Written consent was also filed in 92% of medical histories ( $n = 1399$ ).

## Discussion

This study shows the good acceptance of the parts involved in the primary care initiative to offer minor surgery service and the capacity of the health centre to adopt these techniques with satisfactory results. Among the conclusions of this study, it is worth pointing out the good results obtained in minor surgery in primary care in the diverse aspects studied: good concordance; high activity rates; and few complications. The activity in the unit grew exponentially for the first four years. The expected decrease in demand should be noted during the fifth year. It coincided with reaching the objective of eliminating the pathology of this type that accumulated in the area. A variability, in areas, in the minor surgery procedure rates was observed. The highest rates were found in Valldoreix, where the minor surgery team is located, and where there is a greater accessibility and/or sensitivity of the professionals towards this pathology. We considerer that the main factor for this variability was the training and capacity of the GPs, and

**Table 1**  
Basal characteristics of the population

Variables	Men ( $n = 783$ ) (52%)	Women ( $n = 737$ ) (48%)	Total ( $n = 1520$ )
Age (years)	$46 \pm 16$	$46 \pm 17$	$46 \pm 16$ (range 8–94)
<b>Cardiovascular risk factors</b>			
Diabetes mellitus	57 (7%)	38 (5%)	95 (6%)
Arterial hypertension	96 (12%)	74 (10%)	170 (11%)
Isquemic cardiopathy	22 (3%)	12 (2%)	34 (2%)
Anxiety/depression	35 (4%)	71 (10%)	106 (7%)
<b>ASA physical status classification</b>			
I	668 (87%)	646 (89%)	1314 (88%)
II	101 (13%)	80 (11%)	181 (12%)
III-IV	0	0	0

**Table 2**
**Concordance between the clinical diagnosis following the International Classification of Illnesses, 9th revision and the anatomopathologic diagnosis following the corresponding CIE-9 classification**

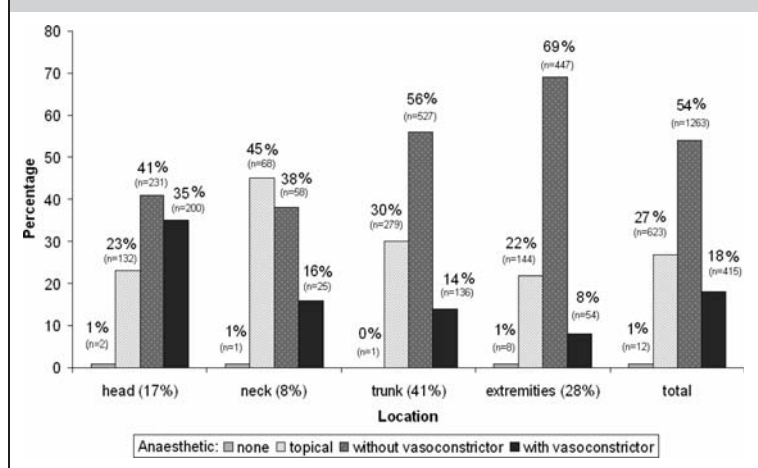
<i>CIE-9-MC Diagnosis</i>	<i>Lesions by clinical diagnosis (n, %)</i>	<i>Lesions coinciding anatomopathologically (n)</i>	<i>Coincidence<sup>a</sup> (%)</i>	<i>Kappa index (95% CI)</i>
706.2 Epidermoid cyst	510 (22%)	431	85%	0.895 (0.872–0.917)
216.0–216.9 Nevus	443 (20%)	391	88%	0.843 (0.814–0.871)
215.0–215.9 Fibromas	421 (18%)	294	70%	0.783 (0.748–0.818)
702.19 Seborrheic keratosis	267 (12%)	243	91%	0.826 (0.790–0.861)
214.0–214.9 Lipomas	164 (7%)	151	92%	0.952 (0.927–0.977)
706.2 Triquilemal cyst	94 (4%)	86	91%	0.896 (0.850–0.942)
216.0–216.9 Histiocytoma	73 (3%)	62	85%	0.889 (0.833–0.944)
228.00–228.09 Hemangioma	64 (3%)	51	80%	0.824 (0.751–0.898)
173.0–173.9 Malignant lesions	1 (0%)	1	100%	0.181 (–0.125–0.486)
Other diagnosis	277 (12%)	155	56%	0.591 (0.537–0.644)
Total	2314	1865	81%	–

<sup>a</sup> Coincidence = number of lesions coinciding anatomopathologically/number of lesions by clinical diagnosis

**Table 3**
**Surgical techniques used**

<i>CIE-9-MC Clinical diagnosis</i>	<i>Gender (% women)</i>	<i>Age (X ± SD)</i>	<i>Incision</i>	<i>Curettage</i>	<i>Fusiform excision</i>	<i>Other techniques</i>
706.2 Epidermoid cyst (n = 510)	186 (36%)	45 ± 15	457 (90%)	3 (1%)	36 (7%)	14 (3%)
216.0–216.9 Nevus (n = 443)	304 (69%)	42 ± 13	0 (0%)	58 (13%)	385 (87%)	0 (0%)
215.0–215.9 Fibromas (n = 421)	195 (46%)	49 ± 14	21 (5%)	359 (85%)	37 (9%)	1 (0%)
702.19 Seborrheic keratosis (n = 267)	127 (48%)	60 ± 14	17 (6%)	236 (88%)	14 (5%)	0 (0%)
214.0–214.9 Lipomas (n = 164)	60 (37%)	51 ± 15	155 (95%)	3 (2%)	6 (4%)	0 (0%)
706.2 Triquilemal cyst (n = 94)	58 (62%)	44 ± 15	91 (97%)	0 (0%)	3 (3%)	0 (0%)
216.0–216.9 Histiocytoma (n = 73)	22 (79%)	39 ± 13	0 (0%)	0 (0%)	73 (100)	0 (0%)
228.00–228.09 Hemangioma (n = 64)	20 (31%)	47 ± 14	0 (0%)	9 (14%)	52 (81%)	3 (5%)
173.0–173.9 Malignant lesion (n = 1)	0	70	1 (100%)	0 (0%)	0 (0%)	0 (0%)
Other diagnosis (n = 277)	144 (52%)	45 ± 19	85 (31%)	87 (31%)	42 (15%)	63 (23%)
Total (n = 2317)	1147 (49%)	47 ± 16	829 (36%)	759 (33%)	648 (28%)	81 (3%)

**Figure 2**  
**Anaesthetic used according to location**



to a lesser extent the different needs of the population.

Among the contributions of this study stand out, in first place, the benefits of incorporating minor surgery in Primary Care. The concordance obtained between the clinical and anatomopathological diagnosis was good,<sup>12</sup> even somehow superior to those found in other studies.<sup>5,13,14</sup> This was the case in all diagnoses except the fibromas, which can present a great clinical resemblance to other pathologies, such as seborrheic digitiform keratosis, superficial nevi and others.

Moreover, the surgical rates in the catchment area of this study were high and similar to the areas where these techniques are fully implemented.<sup>15</sup> The waiting time of the patients was also reduced since the response from primary care was quicker and operating rooms in the hospital were released and hence used for other pathologies.<sup>3</sup> Before setting up the surgery unit in primary care, the hospital's waiting list was 5–7 years, contrasting with the month of waiting time in the unit. Another advantage was the reduction of cost of public health by primary care providing a complete resolution.<sup>14,16</sup> This also results in career development of the professionals concerned.<sup>3</sup>

One of the limitations of this study is that minor surgery is characterized by the need to take decisions based on medical clinic. The confirmation of anatomopathology can only be

obtained at the end of the process. However, this initial uncertain component in minor surgery is assumed from primary care since it is mostly benign lesions that are dealt with and there is no detriment to the patient's health. Theoretically, malignant lesions are sent to surgery-dermatology, although not all malignant lesions are clinically obvious at presentation. The results among the doctors in primary care (who are willing to develop minor surgery and dermatology) and the dermatologists are similar in some studies.<sup>17</sup> In this study, as in other experiences, some malignant lesions are overlooked in the diagnosis based exclusively in clinical criteria.<sup>18,19</sup> Fifty percent of the 10 malignant lesions (four basal cell carcinoma and one melanoma) were not precisely diagnosed clinically compared to the 33% of other studies which assumed the malignant pathology from primary care.<sup>13</sup> Despite being conservative in our unit, we assume the clinical diagnosis of basal cellular carcinoma depending on clinical characteristics (location, size and others).

In this study, there was poor concordance in the malignant lesions similar to the one found in other studies. The main reason was that the lesions clinically diagnosed as malignant were referred and excluded from the study. After four years, the percentage of malignant lesions was lower than 1% and similar to other studies.<sup>6,17–19</sup> Moreover, we observed how it decreased as the minor surgery unit was consolidated and how it increased the experience of the professionals.

Another limitation was that these techniques, which are deeply-rooted in English-speaking countries, were not customary in primary care in Spain. The activity in our unit is at its highest point in the Spanish setting, where there is a great variability in the volume of procedures performed, fluctuating between the 120 and 370 annually.<sup>14</sup> Currently, the number of centres that include minor surgery in their portfolio of services is less than those which do not.

Five percent of the complications observed were similar or lower than in other studies.<sup>20</sup> Nevertheless, we consider that in our study the complications could be over-rated. When diagnosing a located infection, the established criteria<sup>21</sup> do not completely eliminate the subjective component. Hence, in this study, the monitoring was not, by and large, undergone by the doctor who performed the operation by using register sheets

as a source of information. It is possible that some reactions to sutures have been considered infections. Two percent of the infections obtained coincide with the results from a European dermatologic cohort.<sup>22</sup> Other studies show higher percentages of infection. For instance, there are three Australian studies that record more than 8% of infections.<sup>22</sup> The environment where minor surgery is performed could condition the obtained results. There is a clinical essay that shows no differences in postoperative complications between primary care and hospital.<sup>20</sup> However, there is a descriptive study which shows marked differences between rural and urban environments.<sup>23</sup>

Another variability area is the type of sample removed and sent to the anatomopathology service. Our unit coincided with other authors<sup>13,24–27</sup> by agreeing to send all samples to the service when the general practitioners have even a slight suspicion that the lesion could be serious.<sup>25,26</sup> The exception would be those samples clearly not appropriate. Hence, 95% of lesions removed were sent. This percentage is higher than the recommended standard of 60–80%.<sup>5</sup> Variability is very wide and there are units which send only 50% of samples.<sup>17</sup> From our experience, it was positive to start sending out the majority of samples since it helped us evaluate and improve the quality of assistance given.

In our study, minor surgery showed an overall gender balance, both in the operated patients as well as in the surgical techniques used. However, there were differences in diagnosis. Hence, coinciding with the already known, we observed a predominance of nevus, histiocytoma, trichilemmal cysts and seborrheic keratosis in women, whereas fibromas, lipomas and epidermoid cysts were more frequent in men.

We consider that informed consent was satisfactorily resolved. However, this study also revealed a low percentage of tetanus vaccination coverage<sup>28</sup> which led to appropriate intervention to improve this aspect.

As for future recommendations, we consider it very important to encourage professionals in primary care. In English-speaking countries,<sup>2,15</sup> there is a greater tradition in rewarding the interests of professionals to adopt new and beneficial skills. These functions are remunerated accordingly. In other countries, as in Spain, it is still common to depend on the professionals'

voluntarism. It would be much desired to extend the economic reward or, at least, offer some type of acknowledgement and incentive to good professional practice.

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