The Management of Melanoma during the COVID-19 Pandemic: A Single Institutional Experience

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Introduction

- The COVID-19 pandemic has been unprecedented and led to drastic reductions in urgent plastic surgery elective activity.
- Locally, in Galway University Hospital, elective clinics and theatre lists were cancelled. Urgent cancer care was delivered via private hospitals. Delayed access to theatre and the restructuring of plastic surgery services altered the triage and management of skin cancers worldwide.
- We aimed to provide a comparative analysis focused on the diagnosis and management of both invasive and non-invasive melanoma before and during the COVID-19 pandemic in Ireland.

Methods

- A single-centre retrospective review of **589** patients with invasive and non-invasive melanoma in 2019 and 2020 was conducted.
- Patient demographics, tumour subtype and characteristics, sentinel node status, lymphadenectomy status, radiology and systemic oncological therapies were collected.
- Statistical analysis was performed using R v 3.6.3. Counts and percentages were used to summarize the distribution of categorical variables. The mean ± standard deviation (SD) and the median/interquartile range (IQR) were used to summarize the distribution of continuous normal and non-normal variables, respectively.
- Chi-square test of independence was used to assess the association between categorical variables.
- Unpaired t-test and Mann-Whitney test were used to compare the distribution of normal and non-normal variables between groups, respectively. Hypothesis testing was performed at 5% level of significance.

Results

- 589 patients were included
  - Mean age=65.6 (SD=16.2)
  - Male *n*=283 (48%) Female *n*= 306 (52%)
- 2019 (prior to COVID-19) – *n*=277
  - Invasive *n*=129 (46.6%)
  - Non-invasive *n*=148 (53.4%)
- 2020 (during pandemic) – *n*=312
  - Invasive *n*=185 (59.3%)
  - Non-invasive *n*=127 (40.7%)

- In 2019, the mean number of days from GP referral to excisional biopsy was **28.2** days. This increased to **64.3** days in 2020 (*p*=0.037)

- External referrals from GP's decreased signficantly during the pandemic, and increased from dermatologists (*p*=0.001)

Table 1. Referral and Subtype

	2019 *n=277*	2020 *n=312*
Referral to Biopsy	28.2 (24.6)	64.3 (69.6)
Referred From		
GP	231 (83.4%)	179 (60.5%)
Dermatology	35 (12.6%)	94 (31.8%)
Surgery	11 (3.97%)	22 (7.43%)
Medical	0 (0.00%)	1 (0.34%)
Subtype		
In situ	148 (53.4%)	127 (43.6%)
SS	75 (27.1%)	90 (30.9%)
Nodular	29 (10.5%)	38 (13.1%)
LMM	10 (3.61%)	19 (6.53%)
Acral	9 (3.25%)	9 (3.09%)
Amelanotic	0 (0.00%)	1 (0.34%)
Spindle	2 (0.72%)	5 (1.72%)
Naevoid	0 (0.00%)	1 (0.34%)
Mixed SS/ nodular	0 (0.00%)	1 (0.34%)
Recurrent	3 (1.08%)	0 (0.00%)
Spitzoid	1 (0.36%)	0 (0.00%)

SS=superficial spreading; LMM=lentigo maligna melanoma

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Results

- The average Breslow thickness was not significantly different between 2019 and 2020 (*p*=0.229)
- More patients required a sentinel node biopsy in 2020 compared to 2019 **(*p*=0.018)**.
- Of these, 56.2% were positive in 2019 compared to 23.7% in 2020 **(*p*=0.001)**.
- No statistically significant difference was observed in the average deposit size between 2019 and those in 2020 (*p* = 0.365).
- The proportion of the patients that had a completion lymphadenectomy was not significantly different between groups.
- No difference was noted in negative tumour characteristics such as perineural invasion, lymphovascular invasion, ulceration, microsatellites and mitosis (*p*=0.662)

Table 2. Tumour characteristics, surgery, and oncology

	2019 *n=129*	2020 *n=185*	*p*
Breslow thickness	3.10 (3.68)	2.60 (3.16)	0.229
SLNB			**0.018**
Not performed	79 (61.2%)	87 (47.0%)	
Performed	50 (38.8%)	98 (53.0%)	
Nodal Status			**<0.001**
Negative	21 (43.8%)	68 (73.1%)	
Positive	27 (56.2%)	22 (23.7%)	
Failed	0 (0.00%)	3 (3.23%)	
Deposit Size	3.68 (4.06)	6.09 (8.66)	0.304
Extracapsular Extension	4 (19.0%)	7 (41.2%)	0.167
Lymphadenectomy	15 (12.2%)	14 (7.57%)	0.246
Tumour characteristics			0.662
Perineural Invasion	10 (9.09%)	18 (11.5%)	
Lymphovascular	12 (11.0%)	24 (15.2%)	
Ulceration	26 (23.9%)	47 (29.9%)	
Microsatellites	6 (7.69%)	15 (9.55%)	
Mitosis (mm^2)	3.32 (5.24)	3.86 (5.98)	0.398
PET CT Result			0.102
Metastasis	18 (60.0%)	14 (53.8%)	
Oncology referral			**<0.001**
No	5 (10.9%)	137 (74.9%)	
Yes	41 (89.1%)	46 (25.1%)	
Systemic Chemotherapy			**<0.001**
No	2 (10.5%)	155 (83.8%)	
Yes	17 (89.5%)	30 (16.2%)	

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Discussion

- Internationally, melanoma diagnosis significantly decreased at the height of the pandemic in 2019[1], with early data suggesting a possible increase in subsequent tumour Breslow thicknesses[2].
- Early predictive models of COVID suggest an increased incidence and decrease overall survivability model of melanoma due to a delay of diagnosis worldwide[3].
- Due to COVID-19, Galway University Hospital (GUH) had months of decreased elective activity and clinic availability.
- GUH plastic surgery transferred to the publicly-funded private hospital setting and implemented telemedicine clinics to continue urgent cancer services.
- **The diagnosis of invasive melanoma increased during the pandemic, with no negative impact on tumour thickness, negative tumour characteristics, nodal status, or metastasis.**
- **This may represent a country wide success in melanoma management in comparison to neighboring European countries during the COVID-19 pandemic[1-3].**

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