



Supporting Information

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Appendix to: Kovitwanichkanont T, Joseph S, Yip L. Hidden in plain sight: missed umbilical melanoma. *Med J Aust* 2019; doi: 10.5694/mja2.50490.

Table 1: Summary of reported primary umbilical melanoma cases

Year	First author	Number of cases	Malignant transformation in pre-existing naevi	Age (years)	Gender	Time between onset and diagnosis	Melanoma subtype	Breslow Thickness	Clark's level	Sentinel lymph node status	Management	Outcome
1965	Steck ¹	4	Yes Yes Yes Yes	Mean age: 61	ND	36months 24months ND ND	ND ND ND ND	ND ND ND ND	ND ND ND ND	ND ND ND ND	Excision Excision Excision Electrodesiccated (mistaken for BCC)	Died 24months post-surgery Died 12months post-surgery Metastases 12months post-surgery Died of heart disease
1999	Colonna ²	2	Yes	58 30	F M	ND 18months	Nodular ND	ND	V V	Not performed Not performed	WLE Declined surgery	Died 10months post-surgery Died 7months post initial review
2003	Miene ³	1	No	69	F	2months	SSM	1.88mm	III	Not performed	WLE	Local recurrence at 12months managed with repeat WLE; disease-free at 36months
2007	Campos-Munoz ⁴	1	Yes	34	F	3months (misdiagnosed as omphalitis)	SSM	1.06mm	III	Negative	WLE	Disease-free at 18months
2008	Mangas ⁵	1	ND	63	M	Unknown due to obscuration by central adiposity	SSM	0.8mm	III	Negative	WLE	Disease-free at 6months
2009	Cecchi ⁶	1	No	72	F	48months	SSM with nodular component	4.3mm	IV	Negative	WLE	No recurrence 12months post-surgery
2011	Zaccagna ⁷	1	ND	60	F	ND	SSM	2.8mm	IV	Negative	WLE	Disease-free at 86months
2011	Papalas ⁸	4	No	41 58 84 47	M F F F	ND	Nodular SSM SSM SSM	1.75mm 1.87mm 4.16mm 0.42mm	IV IV IV II	ND	ND	ND
2011	Yoshida ⁹	1	No	77	F	36months	ND	17mm	ND	Not performed	WLE	Disease-free at 12months
2013	Song ¹⁰	1	Yes	62	M	1month (misdiagnosed as omphalitis)	ND	3mm	IV	Not performed	WLE	Disease-free at 36months
2013	Navysany ¹¹	1	No	ND	F	ND	ND	4.1mm	ND	ND	WLE	Disease-free at 3months
2015	Di Monta ¹²	3	No	33 50 77	F F M	ND	Nodular SSM SSM	40mm 2.5mm 3mm	ND	Negative Negative ND	WLE WLE WLE	Died 28months post-surgery Disease-free at 21months Died 12months post-surgery
2016	Suzuki ¹³	1	No	83	F	14days	Nodular	11mm	IV	Negative	WLE	Disease-free at 15months
2019	Kovitwanichanont (Current study)	2	Yes Yes	74 44	F F	6months 12months	Nodular SSM	21mm 2.2mm	IV IV	Positive Negative	WLE + Nivolumab WLE	Recurrence at 4months Disease-free at 36months

Abbreviations: ND: not defined; SSM: superficial spreading melanoma; WLE: wide local excision; F: female; M: male

Median Breslow thickness of SSM subtype is 2.2mm; Median Breslow thickness of nodular subtype is 16mm; Average time between onset and diagnosis is 17 months.

References

1. Steck WD, Helwig EB. Tumors of the umbilicus. *Cancer*. 1965;18:907-15.
2. Colonna MR, Giovannini UM, Sturniolo G, Colonna U. The umbilicus: a rare site for melanoma. Clinical considerations in two cases. Case reports. *Scand J Plast Reconstr Surg Hand Surg*. 1999;33(4):449-52.
3. Meine JG, Bailin PL. Primary melanoma of the umbilicus: report of a case and review of the relevant anatomy. *Dermatol Surg*. 2003;29(4):405-7.
4. Campos-Munoz L, Quesada-Cortes A, Ruiz E, Casado M, Pizarro A. Primary melanoma of the umbilicus appearing as omphalitis. *Clin Exp Dermatol*. 2007;32(3):322-4.
5. Mangas C, Romani J, Munoz C, Luelmo J. Navel melanoma: not always easy to detect, not always difficult to remove. *Dermatol Online J*. 2008;14(11):20.
6. Cecchi R, Pavesi M, Buralli L, Rapicano V, De Gaudio C. Primary umbilical melanoma. *Australas J Dermatol*. 2009;50(3):220-2.
7. Zaccagna A, Siatas D, Pisacane A, Giacone E, Picciotto F. Surgical treatment of primary melanoma of the umbilicus with sentinel lymph node biopsy and plastic reconstruction: case report and review of the literature. *Eur J Surg Oncol*. 2011;37(3):233-6.
8. Papalas JA, Selim MA. Metastatic vs primary malignant neoplasms affecting the umbilicus: clinicopathologic features of 77 tumors. *Ann Diagn Pathol*. 2011;15(4):237-42.
9. Yoshida M, Kawara S, Kawada A. Primary umbilical malignant melanoma: report of a case. *Acta Med Kinki Univ*. 2011;36(1):33-6.
10. Song Y, Xu D, Sun L, Ding K, Hu Y, Yuan Y. Diagnosis and management of primary umbilical melanoma with omphalitis features. *Case Rep Oncol*. 2013;6(1):154-7.
11. Navysany S, Daigeler A, Dippel E, Loser C. Reconstruction of the umbilicus after malignant melanoma. *J Dtsch Dermatol Ges*. 2013;11(5):462-4.
12. Di Monta G, Caraco C, Marone U, Grimaldi AM, Anniciello AM, Di Marzo M, et al. Clinicopathologic features and surgical management of primary umbilical melanoma: a case series. *BMC Res Notes*. 2015;8:147.
13. Suzuki S, Yoshida Y, Shiomi T, Yanagihara S, Kimura R, Yamamoto O. Melanoma of the Umbilicus: A Patient Report, Precaution in Operative Strategy, and the First Histopathological Review of Published Cases. *Yonago Acta Med*. 2016;59(2):183-7.