NHS England

Protocol for follow-up scanning in patient with a cranial meningioma v1

West Midlands Cancer Alliance

Coversheet for Cancer Alliance Expert Advisory Group Agreed Documentation

This sheet is to accompany all documentation agreed by the West Midlands Cancer Alliance Expert Advisory Groups. This will assist the Clinical Network to endorse the documentation and request implementation.

EAG name	Brain and Central Nervous System	
Document Title	Protocol for follow-up scanning in patients with a cranial meningioma	
Published date	April 2018	
Document Purpose	This guidance has been produced to support the management and follow-up of adult patients with pineal region tumours.	
Authors		
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PROTOCOL FOR FOLLOW-UP SCANNING IN PATIENTS WITH A CRANIAL MENINGIOMA

Date Approved	**April 2018**
Date for Review	**April 2021**

DOCUMENT HISTORY

Version	Date	Summary
1	April 2018	Reviewed by Cancer Alliance Expert Advisory Group

Scope of the Guideline

This guidance has been produced to support the follow-up management of patients with cranial meningiomas, with particular reference to how often and for how long follow-up imaging should be performed.

2. Background

2.1 Cranial meningiomas are extra axial tumours arising from the arachnoid mater. They comprise approximately 13-26% of all intracranial tumours.[i,ii]

2.2 The incidence of meningiomas is approximately 6 per 100,000 of the population, with two thirds occurring in females.[iii]

2.3 The World Health Organisation (WHO) histopathological classification of meningiomas is indicated in Table 1.[iv]

Table 1: WHO Classification of Meningiomas

Grade	Tumour	Distinguishing Features
1	Meningioma	Various subtypes
2	Atypical meningioma	Brain invasion At least 3 of: • Increased cellularity • High nucleus-cytoplasm ratio; • Prominent nucleoli • Necrosis • Increased mitosis (>4 per high power field)
3	Anaplastic/ malignant meningioma	Greatly increased mitosis (>10 per high power field)

2.4 Simpson's Grading system classifies the extent of surgical removal of meningiomas and is shown in Table 2.[v]

Table 2: Simpsons Grading of Extent of Meningioma Removal

Grade	Surgery
I	Complete tumour excision, including involved dura and bone
II	Complete tumour excision, diathermy of dural attachments
III	Macroscopic tumour removal with small residual foci
IV	Incomplete removal, residual macroscopic disease
V	Biopsy only

2.5 The 5-year recurrence rate for benign (WHO grade 1) completely removed (Simpson Grade I) meningiomas is 20% with a 5-year survival of 70%.[vi]

2.6 The WHO grade and the need for post-operative radiotherapy are the strongest predictors of meningioma recurrence.[vii]

2.7 Over 9 years, the recurrence rate for WHO grade1/ Simpson grade 1 meningiomas was 4.3%.[vii] Most recurrences were in patients with multiple meningiomas or a skull base / falcine location.

2.8 All recurrences of WHO grade 2 & 3 meningiomas occurred within 4 years of surgery. [vii]

2.9 Small (<2cm) meningiomas rarely grow sufficiently to produce symptoms within 5 years.[viii]

2.10 Heavily calcified meningiomas rarely grow.[ix]

3. Guidelines

3.1 For patients in whom residual tumour is expected according to the surgeon's judgement, an early post-operative MR scan should be obtained. If a complete excision has been performed according to the surgeon's judgement (Simpson 1 or 2), an early scan is not necessary. [vii]

3.2 Patients with a solitary convexity WHO Grade 1 meningiomas and Simpson Grade 1 removal should have an MR scan 2½ years post-operatively. If the scan is satisfactory, they can then be discharged from follow-up.

3.3 Patients with solitary skull base or falcine origin WHO Grade 1 meningiomas (all Simpson grades) should have MR scans at 1 year, 2 years, 3½ years and 5 years post-operatively. If the 5-year scan is satisfactory, they can be discharged from follow-up. If a recurrence is detected annual scans should continue.

3.4 Patients with WHO Grade 2 meningiomas should have a scan at 6 months, 1 then annually to 5 years. If the 5-year scan is satisfactory, they can be discharged from follow-up. If a recurrence is detected annual scans should continue until further active treatment is given.

3.5 Patients with WHO Grade 3 meningiomas should have 6-monthly scans for 3 years, then annual scans to 5 years. If the 5-year scan is satisfactory, they can be discharged from follow-up. If a recurrence is detected annual scans should continue indefinitely.

3.6 Patients with multiple meningiomas should have annual scans indefinitely, irrespective of treatment modality because of the possibility of further meningiomas developing.

3.7 Patients with small (<2cm) or with asymptomatic heavily calcified meningiomas should have scans at 2 years and 5 years and can then be discharged if no growth is seen.

3.8 Other patients who have been managed conservatively with regular scanning should have scans at 6 months, annually for 3 years and then scans at 5 years and 10 years..

3.9 Patients who have been managed by radiosurgery, including those being treated for a recurrence, should have scans at 6 months, then annually for 3 years, a scan at 5 years and a final scan at10 years..

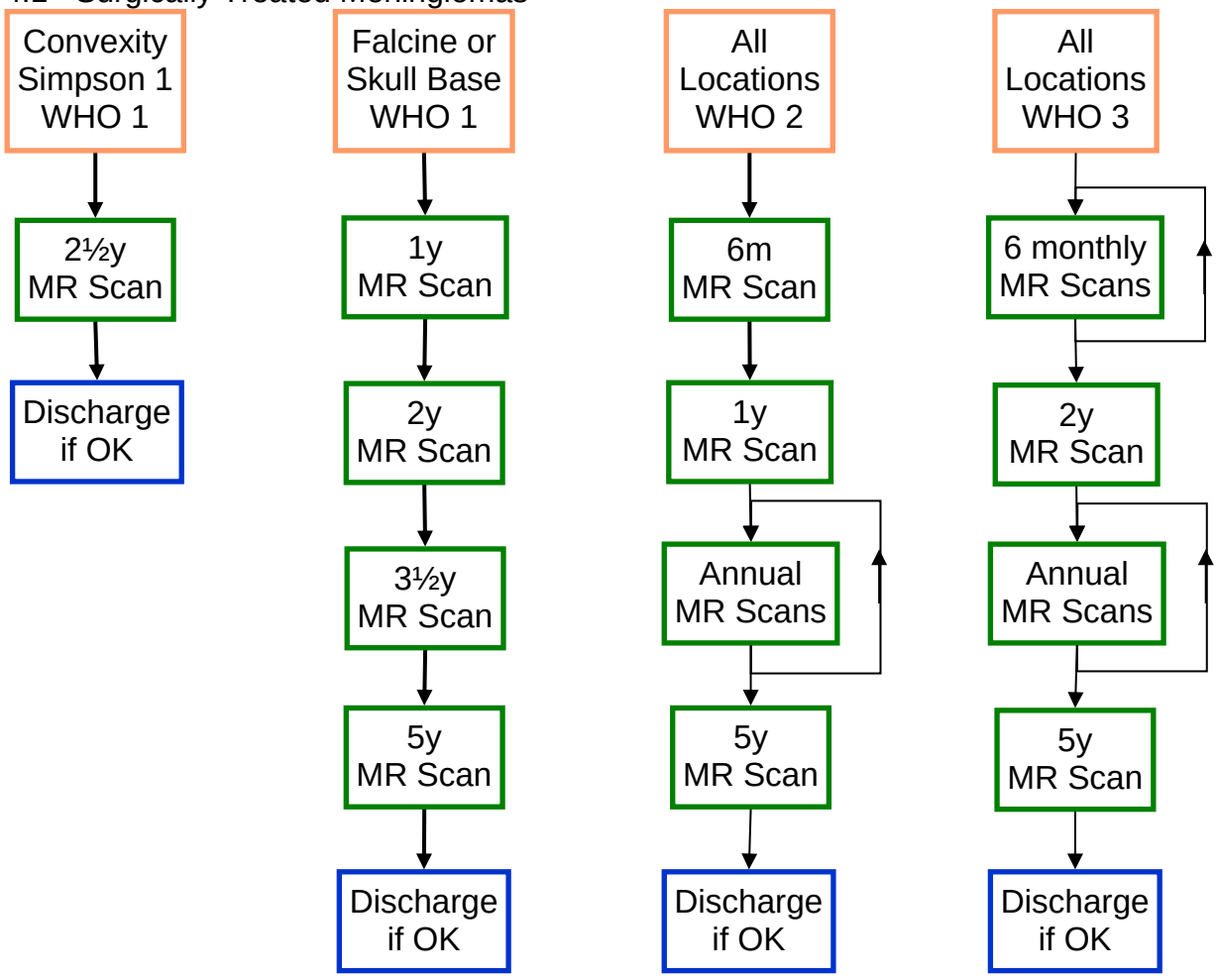
3.10 Patients with recurrent meningiomas being treated by surgical excision should be treated according to the histology and grade of resection of the recurrent tumour as above.

3.11 Follow-up can be ended early in the case of elderly or frail patients if the MDT agrees that further active treatment would not be appropriate.

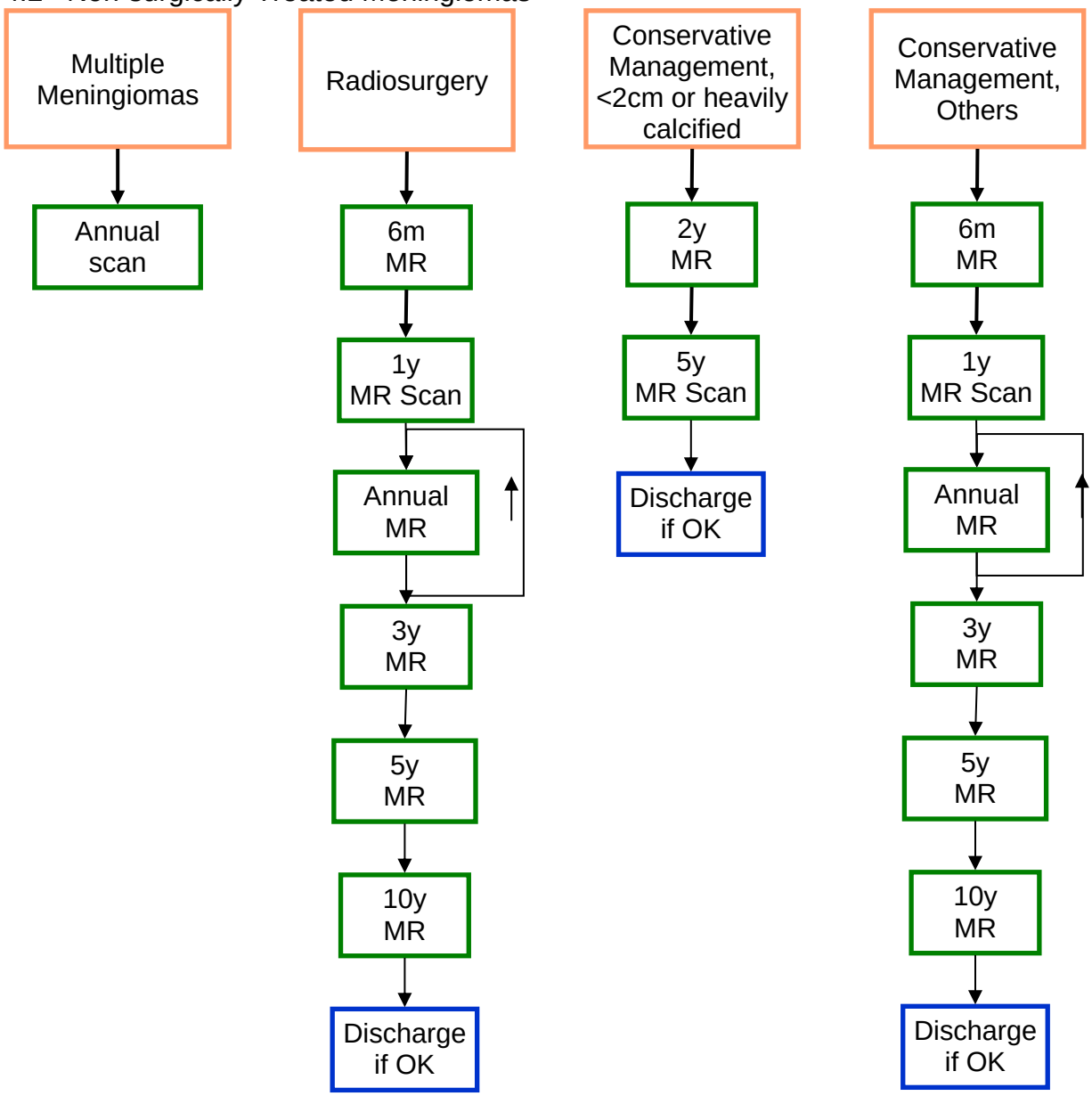
3.12 Patients on clinical trials should follow the trials follow-up protocol irrespective of which other group they would fall into.

4. Flowcharts

4.1 Surgically Treated Meningiomas



4.2 Non-surgically Treated Meningiomas



[i] Longstreth WT *et al*. Epidemiology of intracranial meningioma. *Cancer* 1993; **72**:639-648.

[ii] Claus EB *et al*. Epidemiology of intracranial meningioma. *Neurosurgery* 2005; **57**:1088-1095.

[iii] Bondy M *et al*. Epidemiology and etiology of intracranial meningiomas. *Journal of Neurooncology* 1996;**29**:197-205.

[iv] Louis DN *et al*. The 2007 WHO classification of tumours of the central nervous system. *Acta Neuropathologica* 2007:**114**:97-109.

[v] Simpson D. The recurrence of intracranial meningiomas after surgical treatment. *Journal of Neurology, Neurosurgery & Psychiatry* 1957;**20**:22-29.

[vi] McCarthy BJ *et al*. Factors associated with survival in patients with meningiomas. *Journal of Neurosurgery* 1998;**88**:831-839.

[vii] Halliday J, Fernandez H. Meningioma recurrence: the efficacy and cost-effectiveness of current screening. *British Journal of Neurosurgery* 2010;**24**: 55-61.

viii Sughrue ME *et al.* Treatment decision making based on the published natural history and growth rate of small meningiomas. *Journal of Neurosurgery*. 2010; **113**:1036-42.

ix Rubin G *et al*. Outcome of untreated meningiomas. *Israel Medical Association Journal*: 2011; **13**:157-60, 2011 Mar