

# The Challenges of Managing Patients Who Present With Metastatic Bone Disease and How This Can Be Supported Through a Multidisciplinary Network

Amir G. Ardakani<sup>1</sup>, Martina Faimali<sup>1</sup>, Lukas Nystrom<sup>2</sup>, Nathan Mesko<sup>2</sup>, Muntzer Mughal<sup>3</sup>, Howard Ware<sup>4</sup>, Panagiotis Gikas<sup>1</sup>

<sup>1</sup> Department of Orthopaedic Oncology, Royal National Orthopaedic Hospital, Stanmore, UK. <sup>2</sup> Orthopaedic Surgery at Cleveland Clinic, Cleveland Ohio, US. <sup>3</sup> Department of Surgical Oncology at Cleveland

Clinic London, UK. <sup>4</sup> Orthopaedic Surgery at Cleveland Clinic London, UK

## ABSTRACT

Metastatic disease of the appendicular skeleton is fast becoming a major problem affecting a vast majority of the cancer population and has an increasingly significant impact on our health economics. The treatment of patients with metastatic disease has evolved over the last 50 years in order to meet these challenges in a more patient centered approach. The lack of awareness and recognition of the management options available ultimately delays referral to a specialist team and can have detrimental effects on the patient quality of life and outcomes.

The challenges oftentimes cannot be met by one person alone and are best addressed by a specialised team of health care professionals making important, evidence based treatment decisions within a dedicated Multi-disciplinary Team (MDT) setting. Treatment options are tailored to meet the needs of the individual patient whilst respecting key oncologic principles.

We must be aware of;

- 1) Crucial concepts surrounding the management of patients with metastatic disease,
- 2) The change in thought process overtime and
- 3) The argument for an MDT approach, which we believe is paramount in order to improve outcomes.

We must raise awareness of patients who present with metastatic disease to primary and secondary care settings, emphasising the need for early diagnosis & referral, thus decreasing time to intervention.

Amir Ardakani  
Department of Orthopaedic Oncology, Royal National Orthopaedic Hospital, Stanmore, UK  
Email: amir.ardakani@nhs.net

## INTRODUCTION

The management of patients with skeletal-related events (SREs) is also an important topic in the growing climate of concern regarding health economics. Recent studies have found that early intervention in patients with metastatic bone disease reduces patient morbidity but also overall cost to the health care service. A prompt proactive response to metastatic bone disease has shown to reduced complication rates, hospitalisation length of stay, the need for community care and overall treatment costs. This is specifically true of pathological fractures. A prophylactic approach has shown to be much more cost effective and safer when compared with traditional management after a completed fracture (acute fixation). Additionally the surgical approach to managing metastatic patients has evolved and with the advancement of technology and prosthesis design; fixation alone may not necessarily be the most appropriate option. Applying surgical oncologic principles as an adjuvant treatment to medical oncological management in isolated bony metastatic disease can sometimes render a patient disease free.

As an example, there is a popular notion that surgical management of metastatic bone disease only involves prophylactic intramedullary nail stabilisation (Figure 1). More recent studies have shown that in the appropriately indicated patient the use of massive endoprostheses for the treatment of bone metastases is a reliable method of limb reconstruction (figure 2). They are associated with low complication and failure rates, can restore good function, allow for early weight bearing, alleviate pain, and sometimes allow for complete resection of the tumour. As patients are living longer with advances in systemic therapy, targeted therapy, and radiotherapy treatments, a durable reconstruction of a metastatic skeletal location is becoming more and more important. Appropriate surgical approach and implant choice has the potential to ultimately reduce the burden on our health care system.

The burden of disease and morbidity should not be underestimated, yet there still exists very little awareness and appreciation in the hospital and primary care settings regarding what options for addressing SREs are possible. It was recognised as far as 30 years ago that orthopaedic surgeons managing metastatic bone disease would face challenges that could only be met with the aid of a multidisciplinary team approach to managing these patients.



Figure 1:

Prophylactic IM nailing for pathological fracture secondary to metastatic disease. Radiographs demonstrate subsequent disease progression and implant failure.



Figure 2:

Revision of failed IM nail to proximal femoral endoprosthetic replacement

## The Holistic Approach

What should raise alarms for metastatic bone disease in the primary care setting?

1. MSK pain
  - a. Deep Dull Ache
  - b. Night pain
  - c. Exacerbated by weight-bearing
  - d. Chronicity
2. History of Cancer
3. Unexplained pain in patients over 45
4. Previous Radiotherapy
5. Unexplained weight loss
6. Night sweats

When managing patients with metastatic disease three key principles must be considered;

- 1) Improve pain control
- 2) Maintain or improve quality of life
- 3) Allow early mobilisation
- 4) Create a durable construct
- 5) Control and where possible prevent disease progression

## MDT Assembly

Patients with metastatic disease to bone require input from a variety of specialities in order to successfully navigate their treatment options and tailor the patient's management specific to their needs. The team should consists of; medical and radiation oncologists, radiologists, pathologists, orthopaedic surgeons with an interest in metastatic disease, anaesthesiologists, palliative care specialities, a rehabilitation team (physiotherapists, occupational therapists and psychologist), a cancer nurse specialist and, perhaps most importantly, the patient and their family. Teams behind decision making tools such as that designed by 'OPTIModel' help streamline the decision making process. We propose a similar flow chart (table 1) that can be followed in order to provide the best care for the patient in a timely manner.

## Key Take Home Messages

1. Awareness of metastatic bone disease is key and a prompt referral to specialist care is vital.
2. A delay in referral and treatment is associated with increased morbidity.
3. The face of treating metastatic disease is changing for the better.
4. There is an unquestionable need for well defined and easily accessible platform for both primary care physicians and oncologist to refer patients to for further assessment and management

*A paradigm change is required nationally and internationally for managing suspected metastatic bone disease with rapid and immediate access to specialist services by primary care physicians*

## REFERENCES

1. Metastatic Bone Disease : A Guide to Good Practice . Med Oncol. 2014
2. Willeumier JJ, Linden YM va. der, Sande MAJ va. de, Dijkstra PDS. Treatment of pathological fractures of the long bones. EFORT Open Rev. 2016;
3. Kimura T. Multidisciplinary approach for bone metastasis: A review. Cancers. 2018.

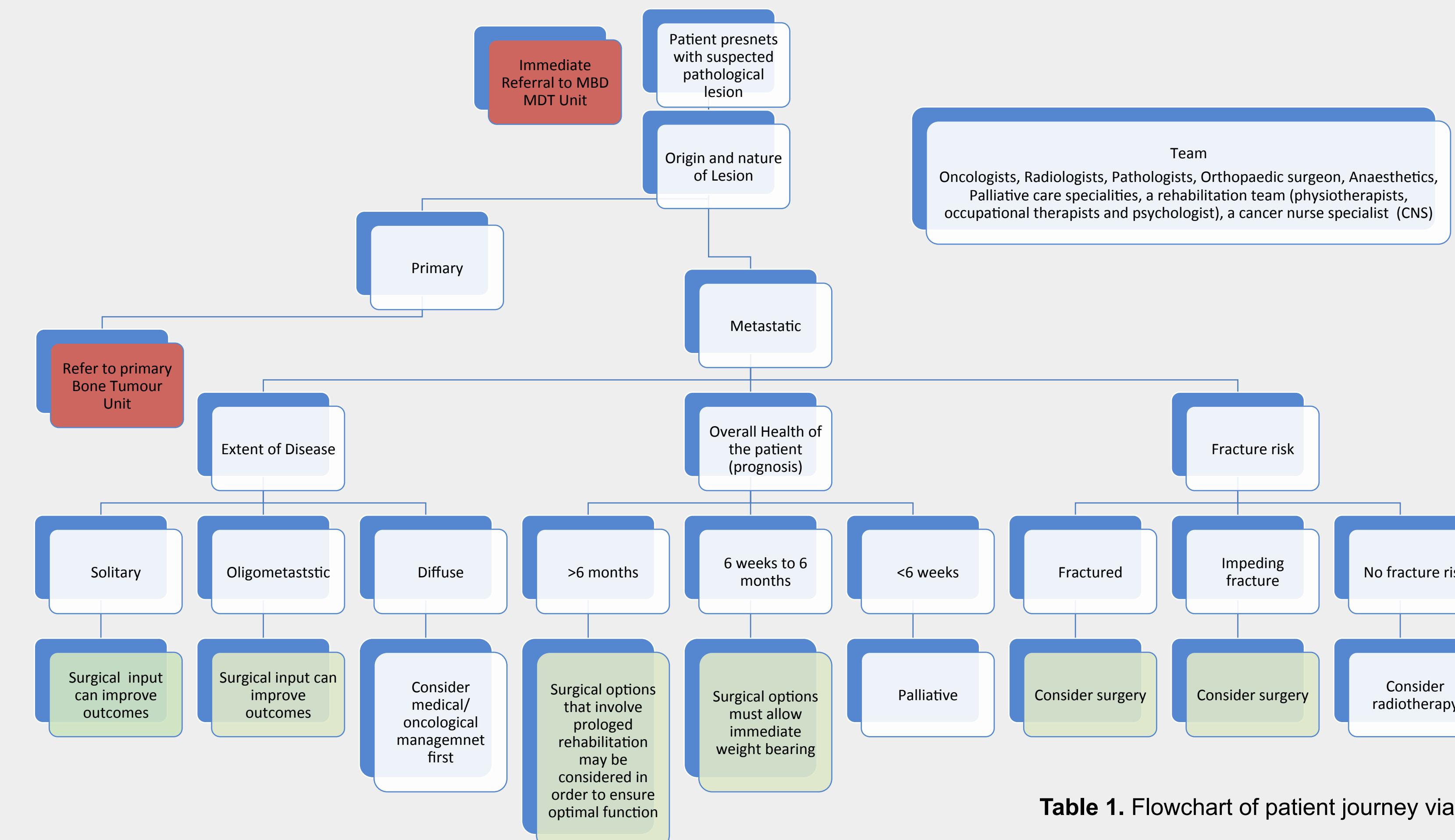


Table 1. Flowchart of patient journey via MDT