# Uncovering the Armpit of Axillary SBRT

**Adam Mutsaers**, JS Fernandes, GF Li, DMF Palhares, S Ali, EA Barnes, H Chen, GJ Czarnota, I Karam, I Poon, H Soliman, D Vesprini, A Sahgal, P Cheung, AV Louie

Radiation Oncology UNIVERSITY OF TORONTO

Department of Radiation Oncology, Sunnybrook Health Sciences, Odette Cancer Centre

Sunnybrook RESEARCH INSTITUTE

## Introduction

Increasing use of SBRT in both primary and metastatic setting; unique challenges with rare anatomic locations like the axilla

Simulation parameters, radiation prescriptions and volumes vary

No dedicated data on process or outcomes for Axillary metastases (AM)

## Objective

1) Review outcomes of SBRT for AM
- Primary endpoint: local failure (LF)
- Secondary: symptom relief, progression-free survival (PFS), Overall survival (OS), and toxicity

2) Identify differences in simulation and treatment process in order to create institutional standard

## Materials & Methods

A single-institution retrospective review conducted for patients with:
- Axillary metastatic disease, any primary
- Minimum dose BED10=48 Gy (30Gy/5)

Treatment indication grouped as:
- Oligometastasis (OM) (<=5 lesions)
- Oliogprogressive (OP) (<=5 growing lesions)
- Symptomatic progression (SP)

Statistics:
- Descriptive statistics
- Kaplan Meier method, competing risk analysis

## Results

### Demographics

- 37 patients with 39 axillary targets; 2014-2022
- Med. follow-up:14.6 mos
- Med. age: 72.0, (+/- 14.0)
- Med GTV diameter: 25mm (IQR: 7-75)

**Fig 1. Patient characteristics (n=37)**

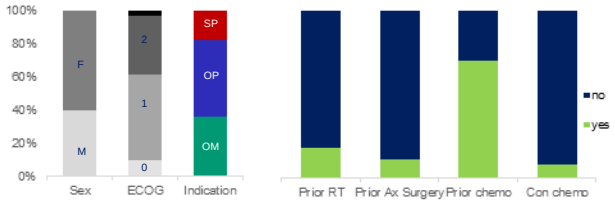
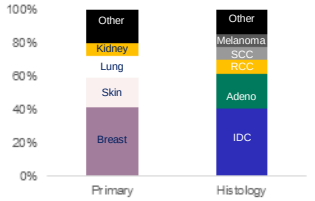



**Fig 2. Lesion characteristics (n=39)**




### Clinical Efficacy and Safety

**Fig 3. Response**

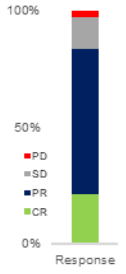
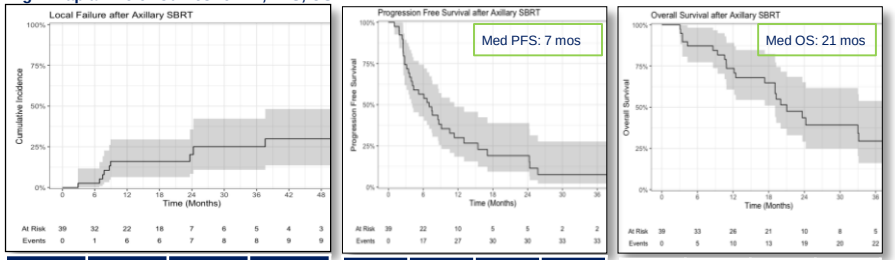
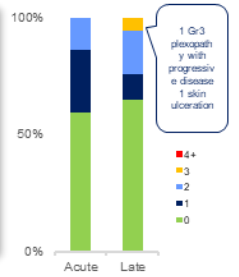



**Fig 4. Kaplan Meier Curves for LF, PFS, OS**




| | 6mos | 12 | 24 | 36 |
|---|---|---|---|---|
| LF | 2.6% | 16.0% | 20.0% | 25.0% |
| PFS | 58% | 30% | 19% | 8% |
| OS | 87% | 74% | 44% | 29% |

**Fig 5. Highest Grade Toxicity**




### Simulation and Treatment Process Heterogeneity

**Fig 6a.Prescibed Dose (Gy/fraction)**

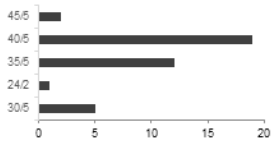
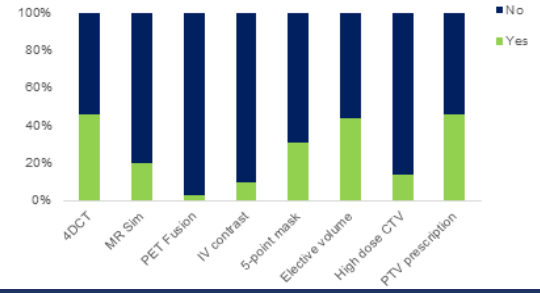


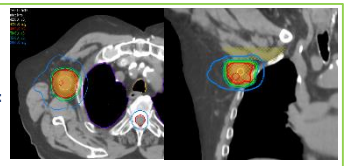

**Figure 6b.Dosimetry (Gy)**

| | Med | IQR-1 | IQR-3 |
|---|---|---|---|
| PTV DMAX | 41.6 | 37.4 | 43.1 |
| PTV Mean | 38.9 | 35.5 | 41.0 |
| Plexus Dmax | 27.8 | 21.7 | 31.1 |

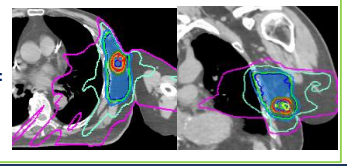
**Fig 7. Planning and treatment parameters**




Case 1:



Case 2:



## Discussion

Symptom response rate: 57% CR, 21% PR, 25% SD, 3% progressive

Local failure rates low, but slightly above some other reported series - small sample size vs others (dose, histology, etc.)

Dose limiting organ most often Brachial Plexus (21-32Gy in our series): ongoing debate and emerging literature regarding toxicity threshold in hypofractionated treatments

Rare grade 3 toxicity, No grade 4+ toxicity

Substantial heterogeneity in process creates opportunity for error, inefficiency

Accumulating evidence suggesting benefit of SBRT in metastatic patients raises importance of delivering treatment effectively to rare anatomic locations

## Conclusion

SBRT for AM appears effective and well-tolerated across a variety of indications, histologies and dose ranges

Significant heterogeneity in treatment process has led to the development of standardized institutional protocol