

## One lump or two? Clinical approach to mammary tumours in felines



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# Disclosure

- I am an IDEXX employee
- Legal disclaimer: The information contained herein is intended to provide general guidance only. As with any diagnosis or treatment, you should use clinical discretion with each patient based on a complete evaluation of the patient, including history, physical presentation, and complete laboratory data. With respect to any drug therapy or monitoring program, you should refer to product inserts for a complete description of dosages, indications, interactions, and cautions. Diagnosis and treatment decisions are the ultimate responsibility of the primary care veterinarian.

# Purpose

- Provide information to appropriately plan approach to cats with malignant mammary tumors prior to surgical removal, **aiming to achieve best prognosis possible**
  - Lack of staging can lead to unrealistic expectations
  - Conservative surgical approach has negative impact on prognosis
- Answer common questions received from vets about histology reports with a diagnosis of feline **malignant** mammary tumor

# Outline

- Clinical features
- Clinical prognostic factors
- Staging
- Surgical approach and prognosis
- Diagnosis
  - Histology and prognosis
- Chemotherapy
- Conclusions

# Clinical features: biological behaviour

It's only a 2cm mass, is it going to be malignant?

>90% malignant >>> **BIG** difference with dogs

- Solitary >> 60% multiple masses (could be related)
- Rapid growth, often detected when size is >2cm
  - Importance of owner awareness for early detection

## Metastasis

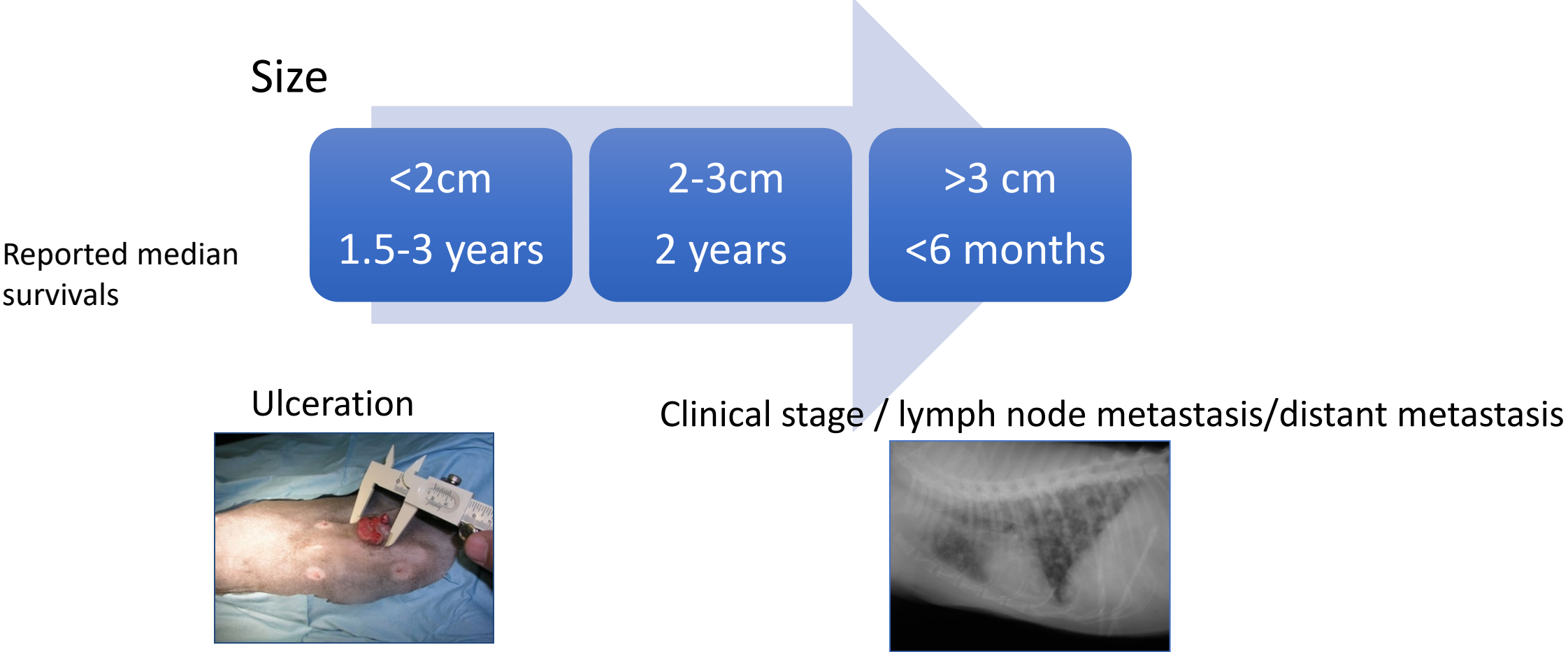
- Regional lymph node involvement (+/- 50%) – important!
  - Lung metastasis (pleura)
  - Visceral (spleen/liver, other...)



(Picture courtesy of Juan Borrego, DACVIM Oncology)

(Wypij et al 2006; Sorenmo et al. 2020)

# Clinical prognostic factors



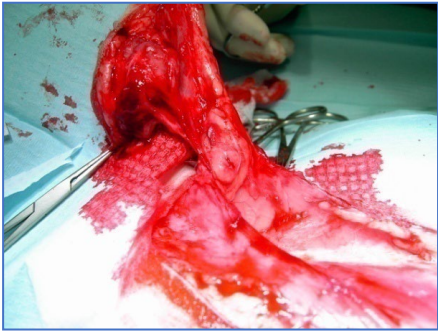
(Viste et al. 2002; Morris et al. 2013; Gemignani et al. 2018)

(Pictures courtesy of Juan Borrego, DACVIM Oncology)

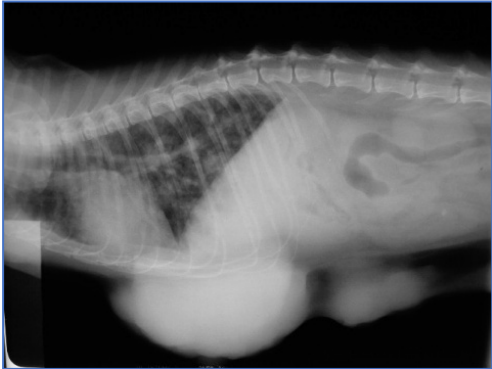
# Clinical stage:

## TNM and clinical staging system for feline mammary tumours (Modified World Health Organization)

CLINICAL STAGE	TUMOR DIAMETER (T)	REGIONAL LYMPH NODE (N)	DISTANT METASTASIS (M)	MST (months)
I	<2 cm (T1)	Negative (N0)	Negative (M0)	29
II	2–3 cm (T2)	Negative (N0)	Negative (M0)	12.5
III	>3 cm (T3) ≤3 cm (T1–T2)	Negative or positive (N0 or N1) Positive (N1)	Negative (M0)	6 9-11
IV	Any T	Any N	Positive (M1)	3-10



(Pictures courtesy of Juan Borrego, DACVIM Oncology)



Tumor size, metastasis to regional Ln, or distant – all prognostic  
Implications: staging needed prior to surgery!

# Lymphatic drainage feline mammary gland



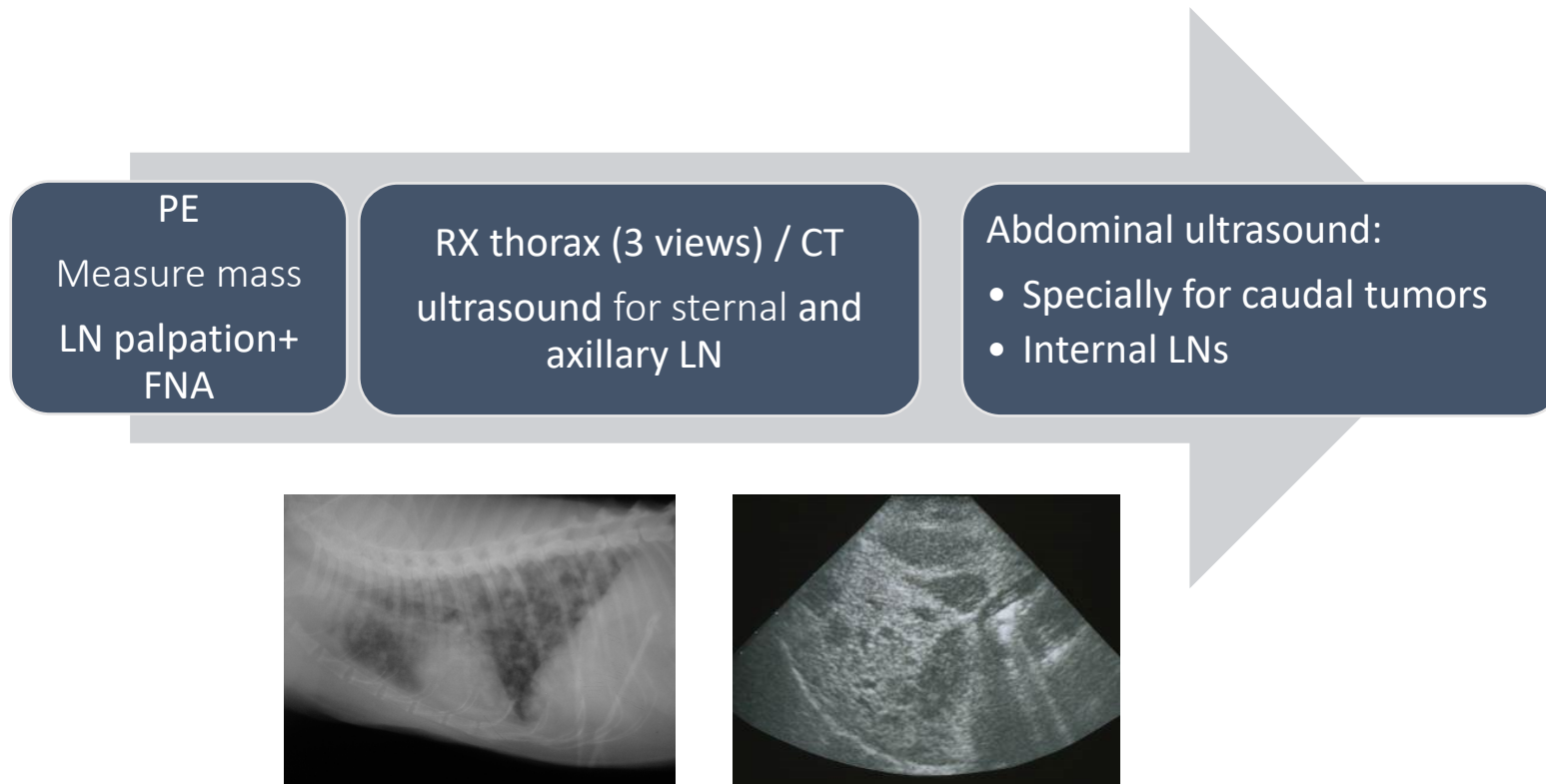
(adapted from Papadopoulou et al. 2009)

- Different than in dogs
- 30% metastasis to regional LN at diagnosis
  - based on staging
- Recent studies: prophylactic resection >> 55%
  - for axillary/ inguinal
- Assessment just with imaging is challenging if small
- LN metastasis independent prognostic factor
  - Role of removal of metastatic LNs

(Papadopoulou et al 2009; Patsikas et al. 2010, Gemignani et al. 2018 )



# Staging: where do I need to look?



(Pictures courtesy of Juan Borrego, DACVIM Oncology)

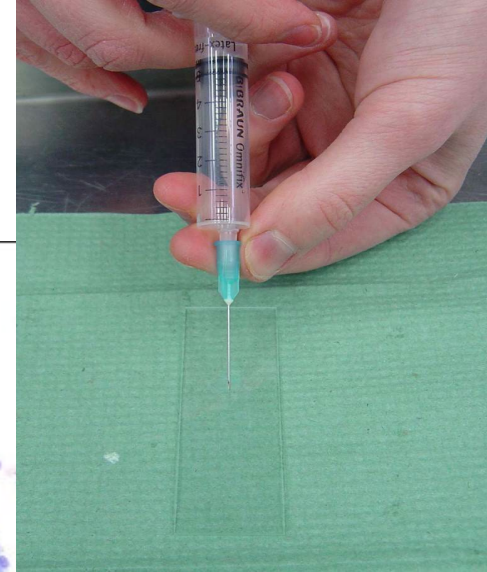
# Diagnosis: Is cytology of a mammary mass useful?

Rarely used as most mammary masses malignant

Histology needed for definitive prognosis

- Can be useful towards client
  - Document mammary neoplasia
  - Justifies staging / aggressive surgery
  - Allows appropriate planning from the start
- Non-mammary feline neoplasias rare
- If intact could rule out
  - Inflammatory aetiology

(Simon et al. 2009; Sontas et al. 2012)



(Picture courtesy of Dr Juan Borrego DACVIM Oncology; cytology provided by IDEXX Laboratories)

# Other clinical prognostic factors

Type Of Surgery: Extension

Histological grade

# Surgery and prognosis

Independent prognostic factor

Type of surgery and disease-free interval

- Bilateral > unilateral > regional
  - Regional mastectomy (7 months)
  - Radical unilateral mastectomy (10-18 months)
  - Radical bilateral mastectomy (18-30 months)
- Local resection
  - 70% recurrence or new lesions, mets in LNs
- Recurrence unilateral 46.7% vs. bilateral mastectomy 20%
  - Narrow/incomplete margins highest risk
  - bilateral mastectomy protective against progression

(MacEwen et al. 1984; Gemignani et al. 2018)



(Pictures courtesy of Manuel Jimenez, DECVS)

# Surgery unilateral versus bilateral strip

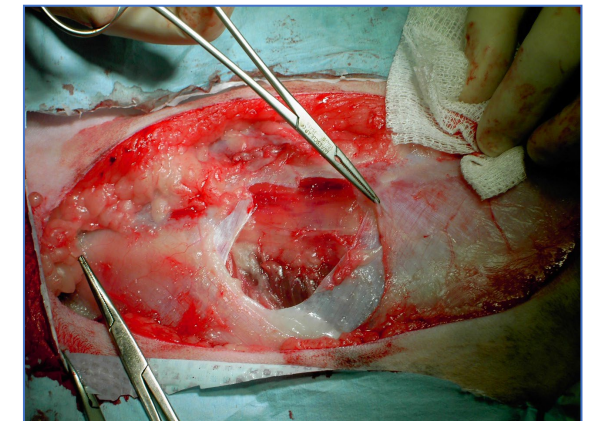
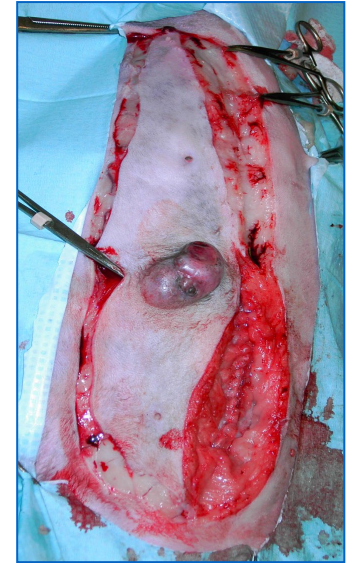
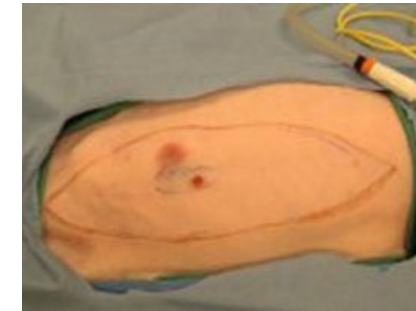
Mastectomy type and survival independent prognostic factor

- MST 37 months bilateral vs. 15.5 months unilateral
- Lower % of mets post sx after bilateral!!
- With metastasis no difference uni vs. bilateral in survival
  - Importance of staging, mastectomy not protective beyond mammary gland

## Technique

- En bloc resection and lateral margins of 2-3 cm
- Fascia at least in area of recurrences
- Bilateral
  - One procedure
  - In 2 stages +/- 1 month in between

(Gemignani et al. 2018, Sorenmo et al. 2020)



(Pictures courtesy of Manuel Jimenez, DECVS)



# Histology and prognosis

- Histological grade
  - Independent prognostic factor
    - Retrospective studies, survey-based clinical information
    - Survivals described low, likely from marginal surgeries
  - Grade I adenocarcinomas
    - 100% 1- year survival – MST 29-31 months ≈ 20% of cases
  - Grade II MST 12 months
  - Grade III MST 5 months
- Vascular/lymphatic invasion
- Tumor type:
  - Tubulopapillary ↑
  - Anaplastic adenocarcinoma ↓
- Lymph node assessment

(Mills et al. 2015; Gemigiani et al. 2018)



(Pictures courtesy of Manuel Jimenez, DECVS)

# Chemotherapy

After surgery (microscopic disease!)

- Indicated if vascular invasion/metastasis present,
  - if LN affected – best removal first
- When radical bilateral mastectomy with removal of regional LNs performed
  - Unclear role of chemo if >> positive prognostic factors
  - Protective if negative prognostic factors
- CONSERVATIVE surgery delays time to recurrence/metastasis
  - Does NOT AVOID it

Macroscopic disease. Scarce information

- Response rate 20-30% short lived (<3month)
- Doxorubicin, carboplatin, COX-2 inhibitor, toceranib



(Pictures courtesy of Dr. Juan Borrego DACVIM Oncology)

(Petrucci et al. 2021; PEtrucci et al. 2021; Gemigiani et al. 2018)

# Conclusions

- 80% of feline mammary tumors are malignant
- Only prognostic factors we can control are early detection and type of surgery
- Thorough staging prior to surgery needed to detect disease beyond mammary gland and regional LNs
- Low recurrence and further metastasis after bilateral mastectomy
- Early detection extremely important and early therapy are needed to improve survival



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# Questions?