Apocrine Gland Anal Sac Adenocarcinoma and Sublumbar Lymph Node Metastasis: *A VSSO Retrospective Study*

Julius Liptak, Laura Selmic, Pierre Amsellem, Maurizio Annoni, Nick Bacon, John Berg, Paolo Buracco, Elaine Caplan, Alexandre Caron, Ryan Cavanaugh, Ben Clarke, Alastair Coomer, Susan Downing, Ronan Doyle, Agatha Kisiel, Janet Kovak, Mary Lafferty, Karl Maritato, Brad Matz, Emanuela Morello, Maureen Mueller, Kazuhisa Oyamad, Sheldon Padgett, Gerry Polton, Cecilia Robat, Ameet Singh, Rod Straw, Julia Sumner, Maurine Thomson, Christine Warzee, Ralph Webster, Courtney Zwahlen

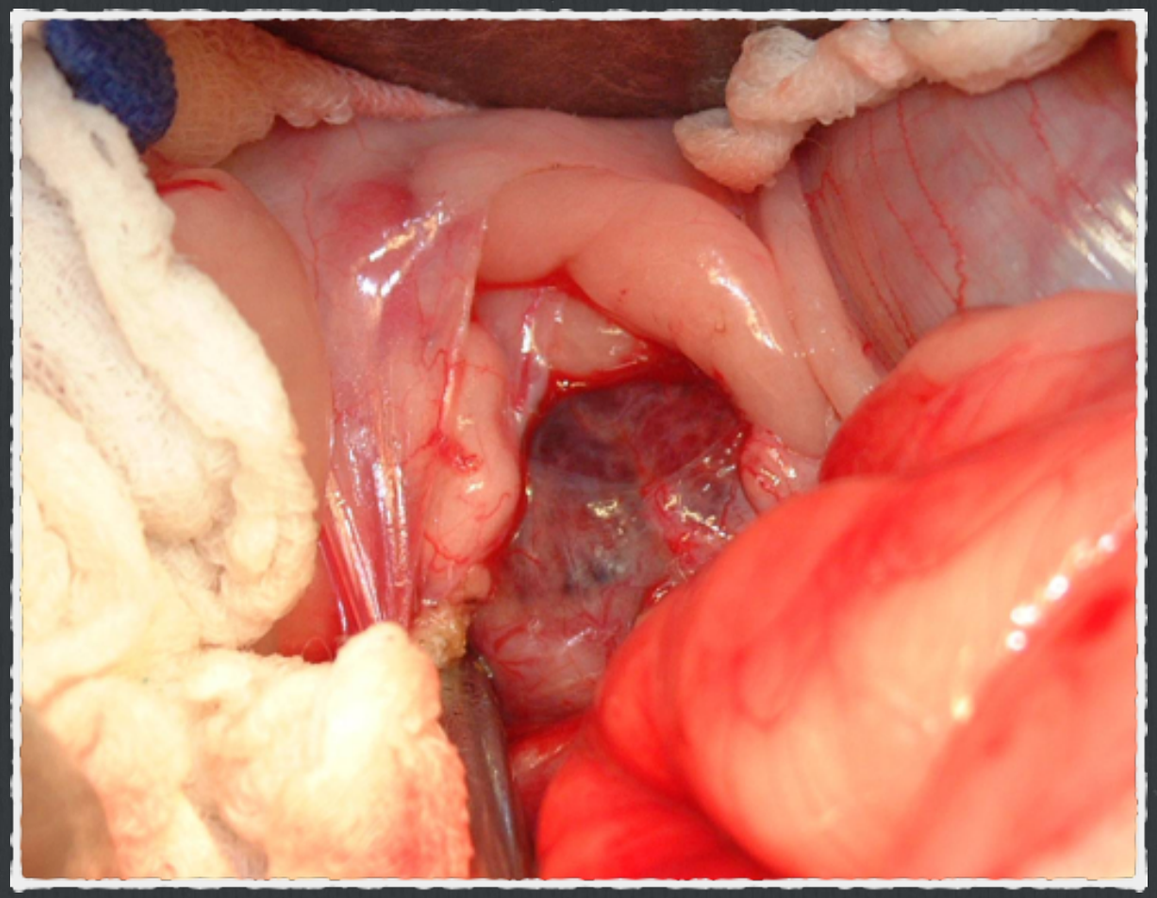
Sublumbar Lymph Node Excision

- Caudal ventral midline approach
  - Extend incision to the cranial pubis
- Anatomical concerns
  - Aorta and distal aortic branches
  - Caudal vena cava and distal caval branches
- ± Cross-matching or blood typing

Sublumbar Lymph Node Excision

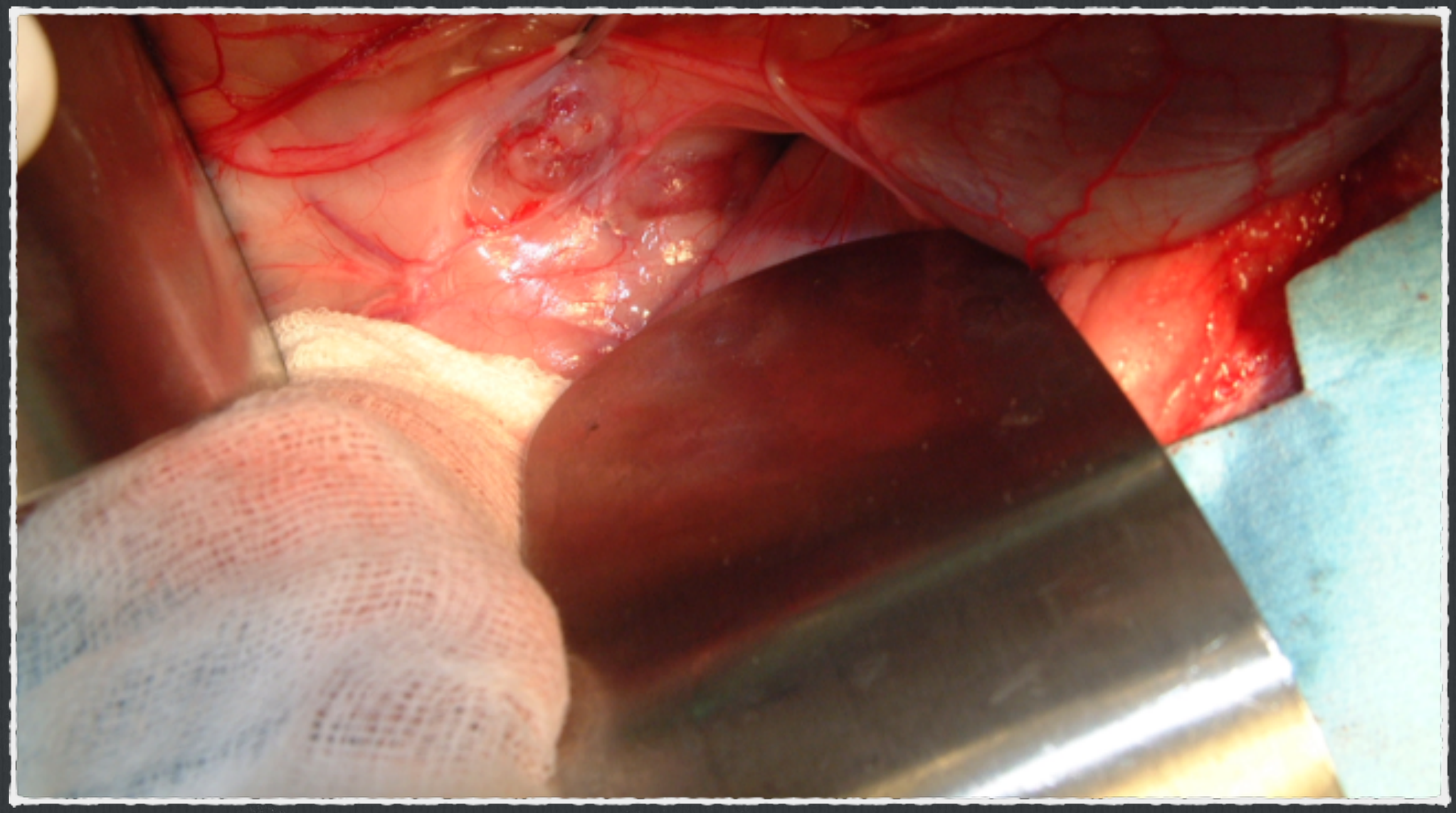
- ☐ 7 = external iliac LN
- ☐ 8 = internal iliac LN
- ☐ 9 = medial sacral LN
- ☐ 10 = lateral sacral LN

Sublumbar Lymph Node Excision

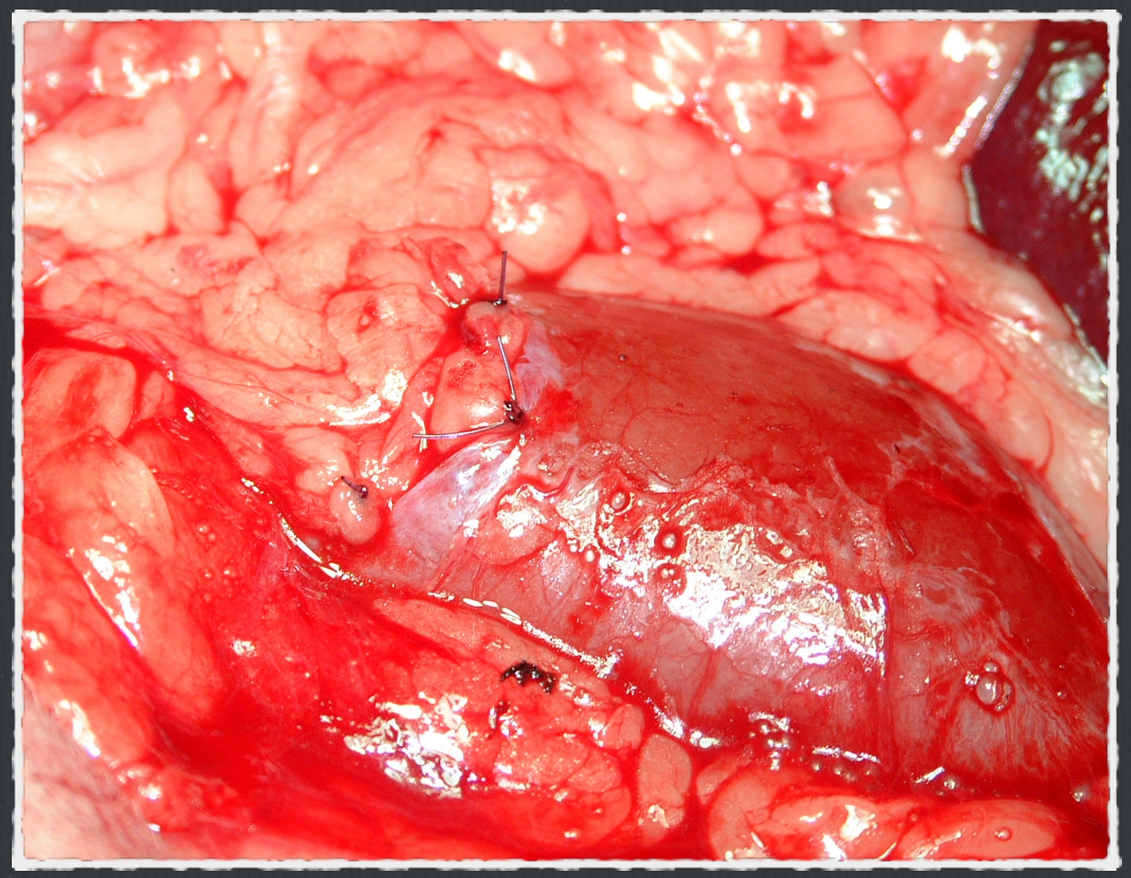


- Visualization can be difficult
- Assistance
- Retractors

Sublumbar Lymph Node Excision

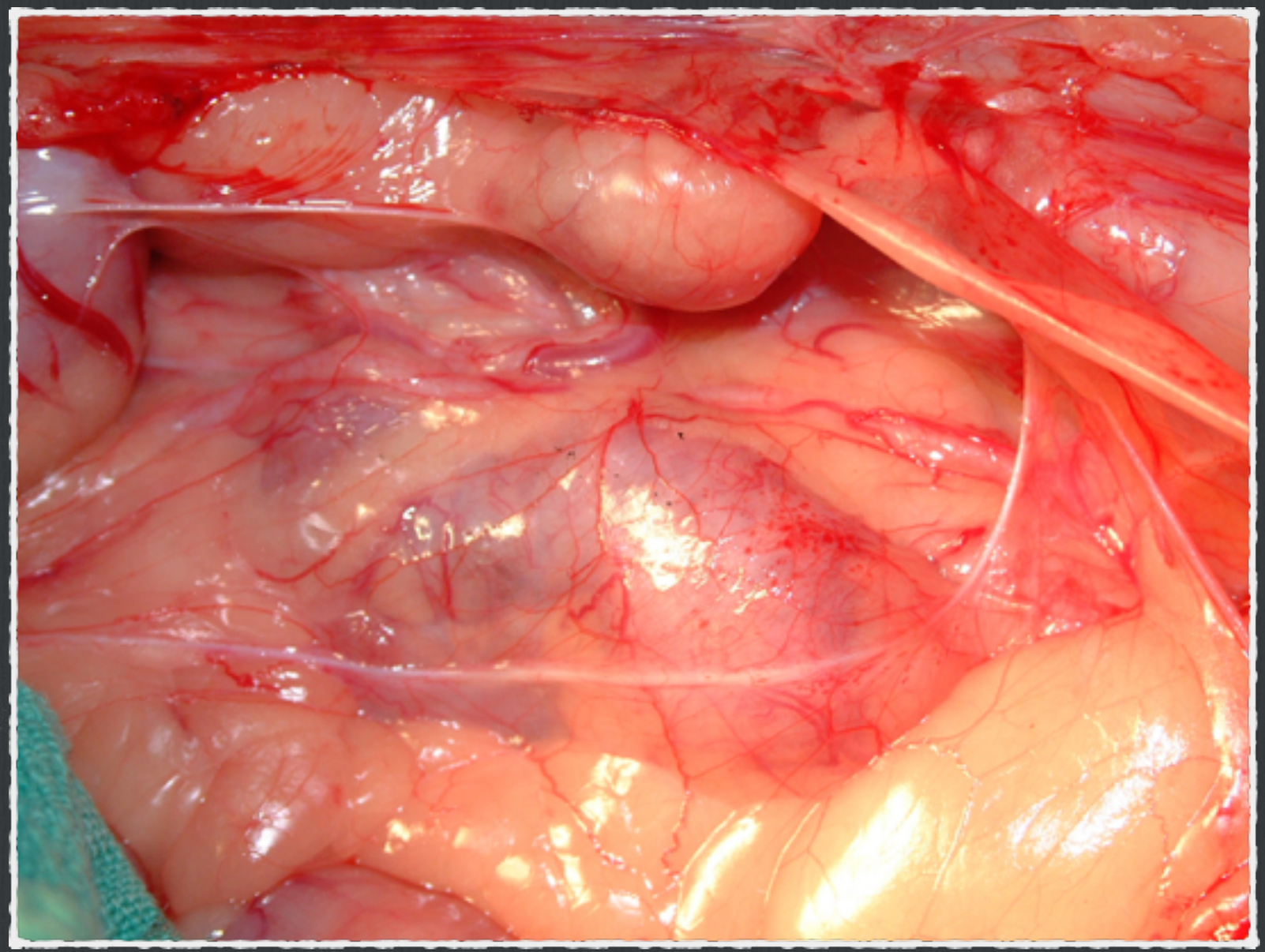


Sublumbar Lymph Node Excision

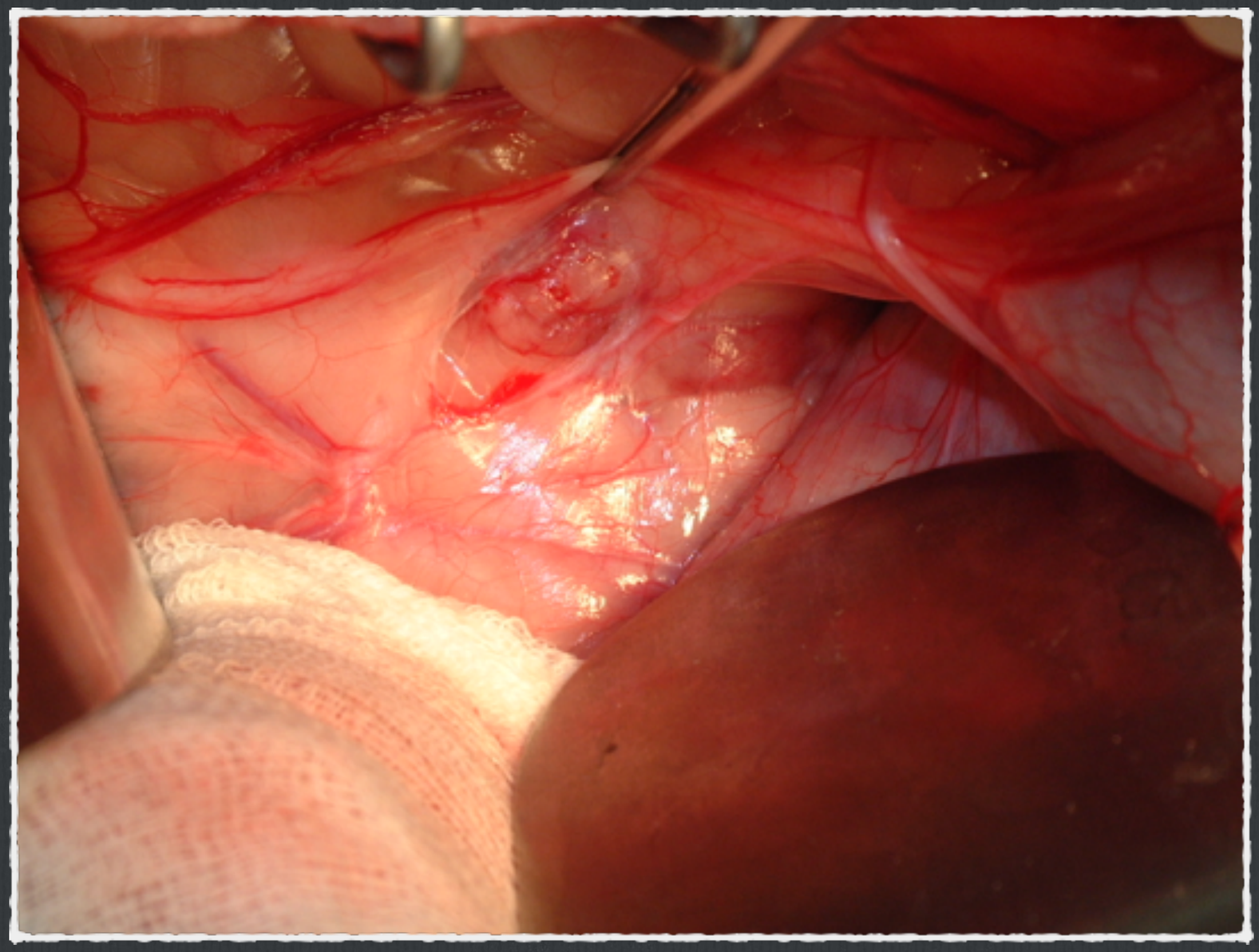


- Sublumbar lymph nodes can either be
  - Solid
  - Cystic

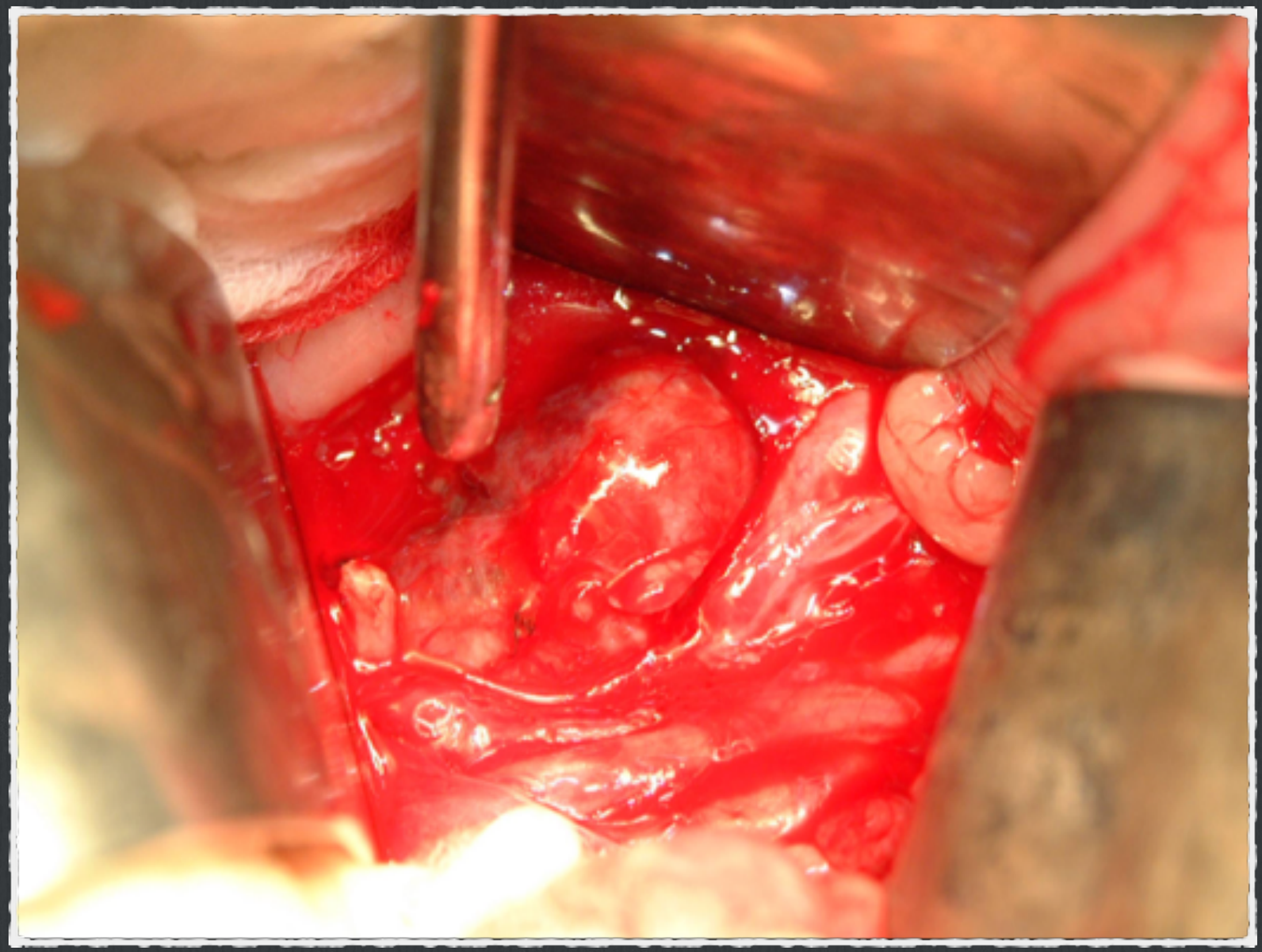
Sublumbar Lymph Node Excision



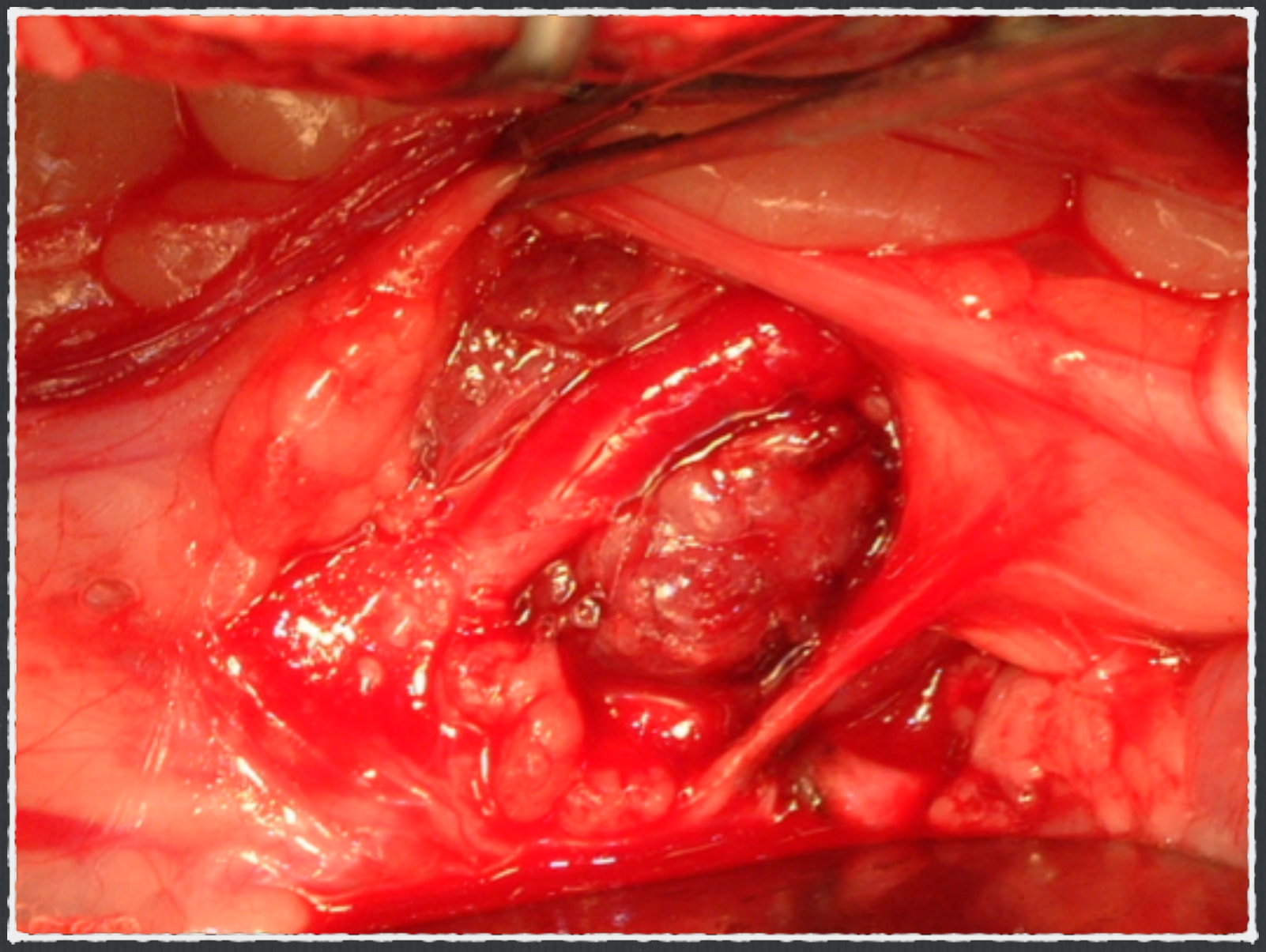
Sublumbar Lymph Node Excision



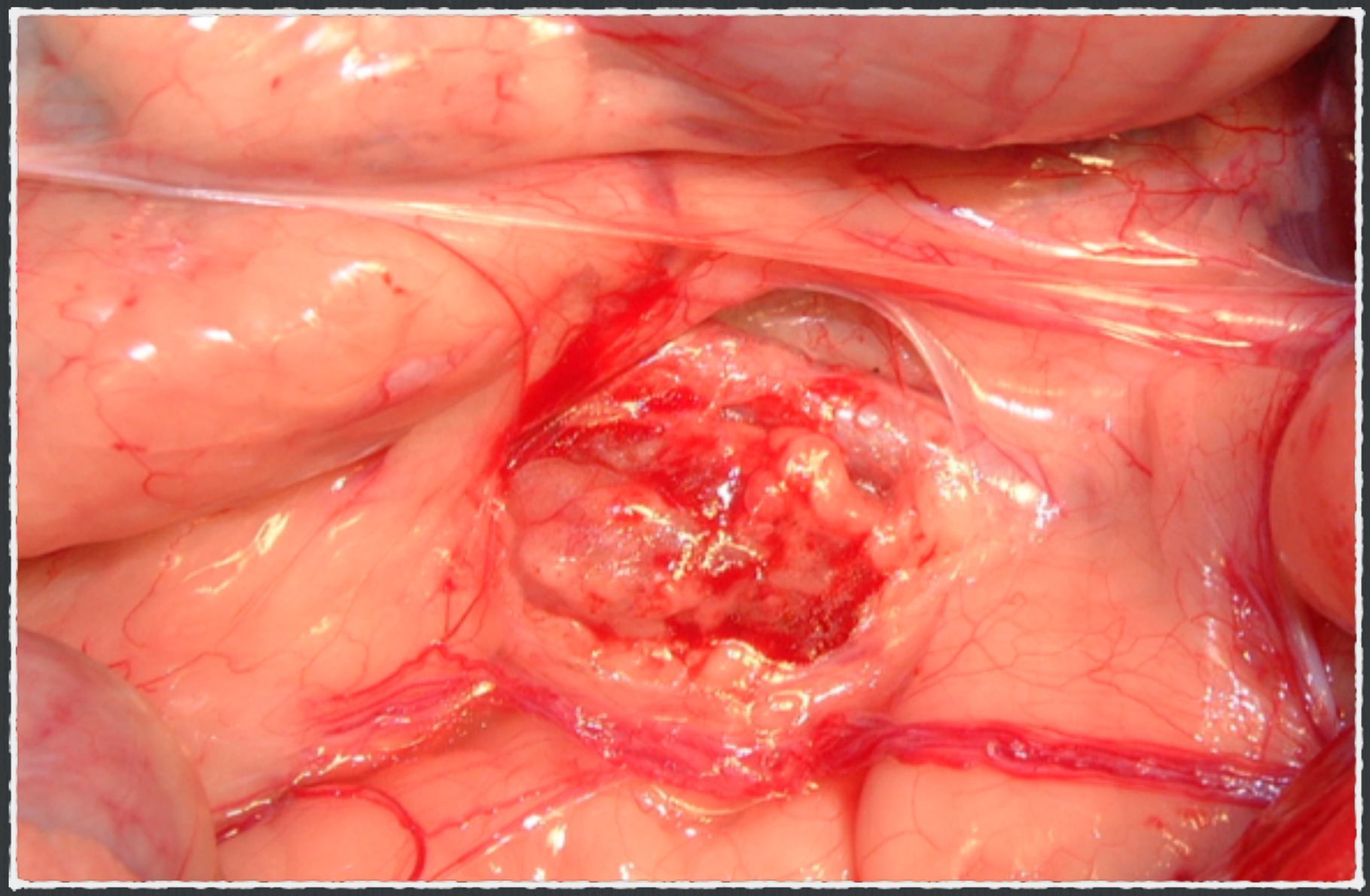
Sublumbar Lymph Node Excision



Sublumbar Lymph Node Excision



Sublumbar Lymph Node Excision



Sublumbar Lymph Node Excision

- Should we excise metastatic sublumbar lymph nodes?

Sublumbar Lymph Node Excision

- Should we excise metastatic sublumbar lymph nodes?
- Halsted theory
- Lymphadenectomy for clinical staging and survival

Sublumbar Lymph Node Excision

- Should we excise metastatic sublumbar lymph nodes?
- Halsted theory
  - Lymphadenectomy for clinical staging and survival
- Cady-Fisher theory
  - Lymphadenectomy for clinical staging only because cancer is a systemic disease and lymph node excision will not affect survival

Carcinoma of the apocrine glands of the anal sac in dogs: 113 cases (1985–1995)

Laurel E. Williams, DVM, DACVIM; John M. Gliatto, VMD, DACVP; Richard K. Dodge, MS; Jeffrey L. Johnson, MS; Rance M. Gamblin, DVM, DACVIM; Douglas H. Thamm, VMD, DACVIM; Susan E. Lana, DVM, DACVIM; Mary Szymkowski, DVM; Antony S. Moore, MVSc, DACVIM

- 49/113 dogs with sublumbar lymph node metastasis

- Sublumbar lymph node metastasis was not a poor prognostic factor if surgically excised

Carcinoma of the apocrine glands of the anal sac in dogs: 113 cases (1985–1995)

Laurel E. Williams, DVM, DACVIM; John M. Gliatto, VMD, DACVP; Richard K. Dodge, MS; Jeffrey L. Johnson, MS; Rance M. Gamblin, DVM, DACVIM; Douglas H. Thamm, VMD, DACVIM; Susan E. Lana, DVM, DACVIM; Mary Szymkowski, DVM; Antony S. Moore, MVSc, DACVIM

- 49/113 dogs with sublumbar lymph node metastasis

- Sublumbar lymph node metastasis was <u>not</u> a poor prognostic factor if surgically excised

- But … only 12/49 dogs with sublumbar lymph node metastasis were treated surgically

J Vet Intern Med 2007;21:274–280

Clinical Stage, Therapy, and Prognosis in Canine Anal Sac Gland Carcinoma

Gerry A. Polton and Malcolm J. Brearley

- 47/80 dogs with sublumbar lymph node metastasis
- Presence of sublumbar lymph node metastasis was a poor prognostic factor, but …

J Vet Intern Med 2007;21:274–280

Clinical Stage, Therapy, and Prognosis in Canine Anal Sac Gland Carcinoma

Gerry A. Polton and Malcolm J. Brearley

- 47/80 dogs with sublumbar lymph node metastasis
- Presence of sublumbar lymph node metastasis was a poor prognostic factor, but …
- Sublumbar lymph node metastasis was <u>not</u> a poor prognostic factor if surgically excised

J Vet Intern Med 2007;21:274–280

Clinical Stage, Therapy, and Prognosis in Canine Anal Sac Gland Carcinoma

Gerry A. Polton and Malcolm J. Brearley

- 47/80 dogs with sublumbar lymph node metastasis
- Presence of sublumbar lymph node metastasis was a poor prognostic factor, but …
- Sublumbar lymph node metastasis was not a poor prognostic factor if surgically excised
- But … only 11/47 dogs with sublumbar lymph node metastasis were treated surgically

Carcinoma of the apocrine glands of the anal sac in dogs: 113 cases (1985–1995)

Laurel E. Williams, DVM, DACVIM; John M. Gliatto, VMD, DACVP; Richard K. Dodge, MS; Jeffrey L. Johnson, MS; Rance M. Gamblin, DVM, DACVIM; Douglas H. Thamm, VMD, DACVIM; Susan E. Lana, DVM, DACVIM; Mary Szymkowski, DVM; Antony S. Moore, MVSc, DACVIM

- No surgery
- Tumor size > 10cm^2
- Hypercalcemia
- Lung metastasis

Carcinoma of the apocrine glands of the anal sac in dogs: 113 cases (1985–1995)

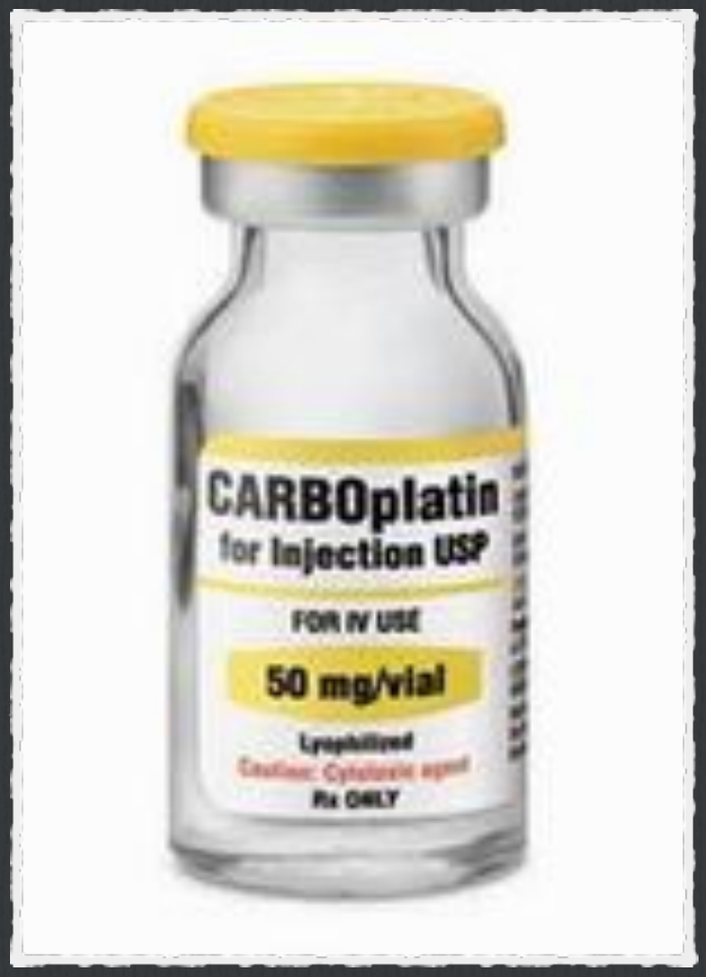
Laurel E. Williams, DVM, DACVIM; John M. Gliatto, VMD, DACVP; Richard K. Dodge, MS; Jeffrey L. Johnson, MS; Rance M. Gamblin, DVM, DACVIM; Douglas H. Thamm, VMD, DACVIM; Susan E. Lana, DVM, DACVIM; Mary Szymkowski, DVM; Antony S. Moore, MVSc, DACVIM

- Surgery in treatment protocol
  - MST 584 days with surgery alone or in combination with other treatments
  - MST 402 days when surgery was not included in the treatment protocol

	Surgery	Surgery & Chemotherapy	Surgery, Radiation & Chemotherapy
Median Survival Time	500 days	540 days	742-956 days
1-Year Survival Rate	65%	69%	80%
2-Year Survival Rate	29%	38%	56%

Carcinoma of the apocrine glands of the anal sac in dogs: 113 cases (1985–1995)

Laurel E. Williams, DVM, DACVIM; John M. Gliatto, VMD, DACVP; Richard K. Dodge, MS; Jeffrey L. Johnson, MS; Rance M. Gamblin, DVM, DACVIM; Douglas H. Thamm, VMD, DACVIM; Susan E. Lana, DVM, DACVIM; Mary Szymkowski, DVM; Antony S. Moore, MVSc, DACVIM



- Controversial
- Highly metastatic tumor
- No proven benefit
  - MST 500 days with surgery alone
  - MST 540 days with surgery and chemotherapy

J Vet Intern Med 2007;21:274–280

Clinical Stage, Therapy, and Prognosis in Canine Anal Sac Gland Carcinoma

Gerry A. Polton and Malcolm J. Brearley

- Cohort A: Retrospective analysis of 80 dogs
  - No treatment
  - Presence of sublumbar lymph node metastasis
  - Presence of distant metastasis
  - Tumor size > 2.5cm

J Vet Intern Med 2007;21:274–280

Clinical Stage, Therapy, and Prognosis in Canine Anal Sac Gland Carcinoma

Gerry A. Polton and Malcolm J. Brearley

Clinical Stage	T	N	M
Stage 1	< 2.5cm diameter	N0	M0
Stage 2	> 2.5cm diameter	N0	M0
Stage 3a	Any T	N1 < 4.5cm diameter	M0
Stage 3b	Any T	N1 > 4.5cm diameter	M0
Stage 4	Any T	Any M	M1

J Vet Intern Med 2007;21:274–280

Clinical Stage, Therapy, and Prognosis in Canine Anal Sac Gland Carcinoma

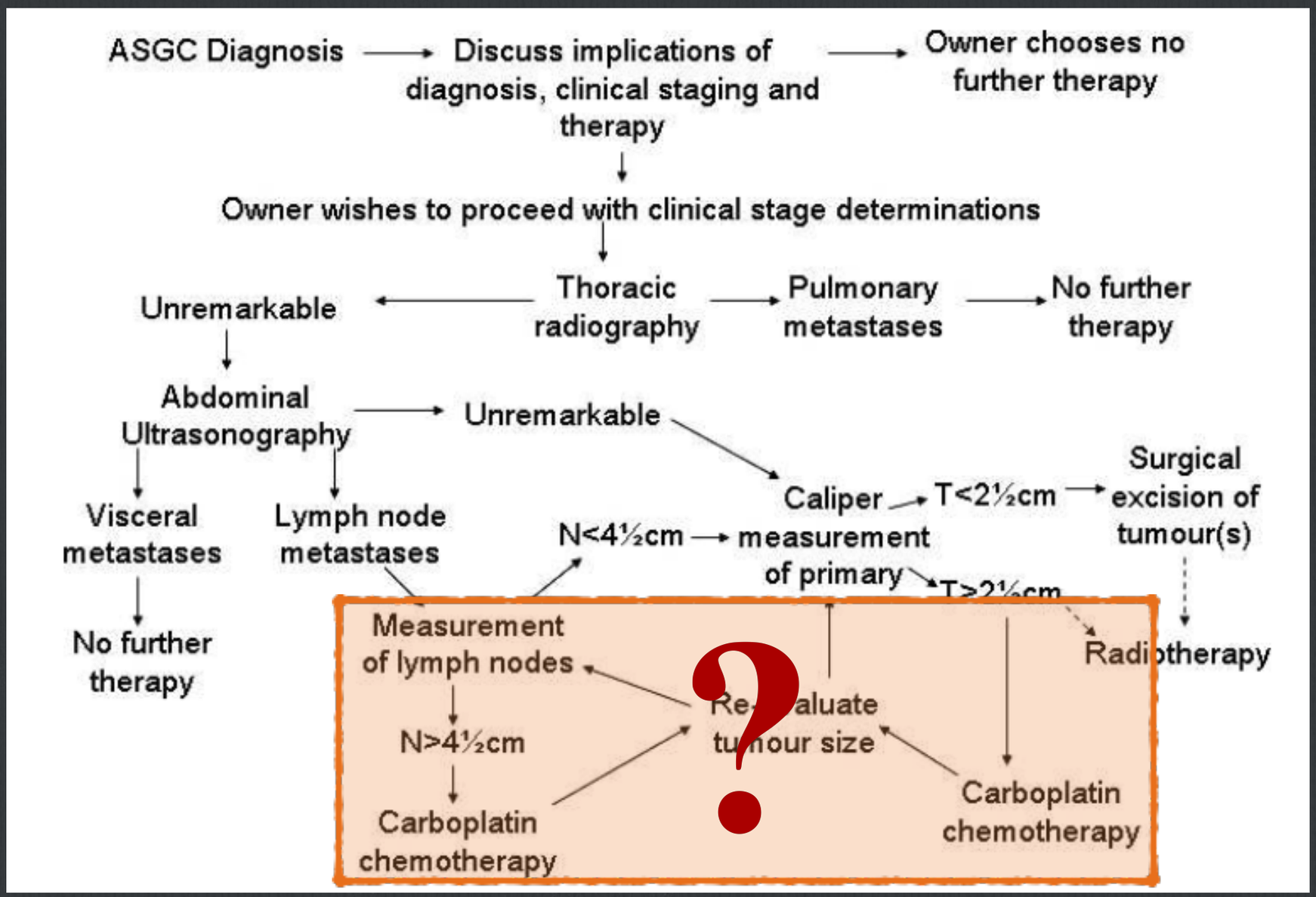
Gerry A. Polton and Malcolm J. Brearley

Clinical Stage	T	N	M
Stage 1	< 2.5cm diameter	N0	M0
Stage 2	> 2.5cm diameter	N0	M0
Stage 3a	Any T	N1 < 4.5cm diameter	M0
Stage 3b	Any T	N1 > 4.5cm diameter	M0
Stage 4	Any T	Any M	M1

J Vet Intern Med 2007;21:274–280

Clinical Stage, Therapy, and Prognosis in Canine Anal Sac Gland Carcinoma

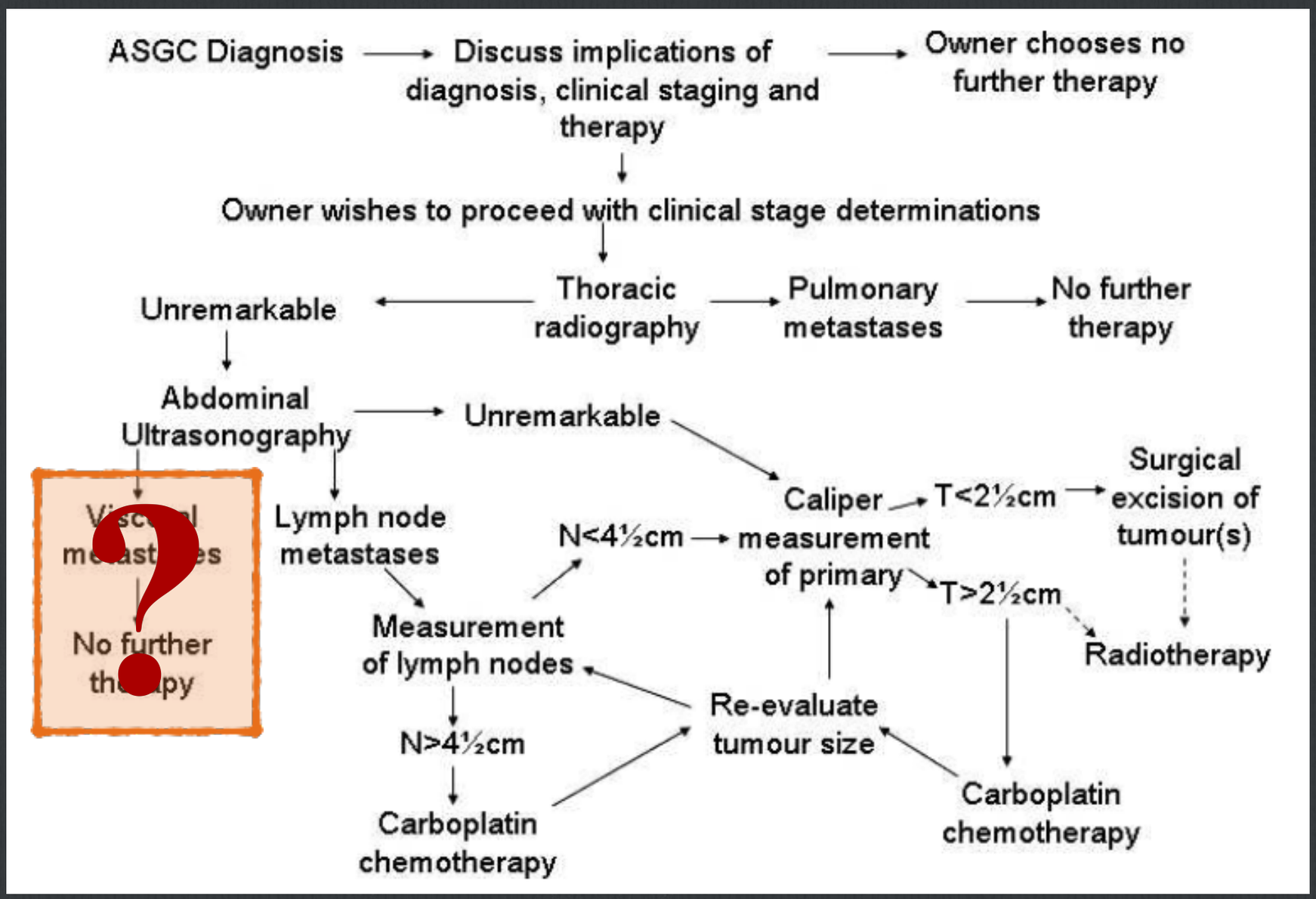
Gerry A. Polton and Malcolm J. Brearley



J Vet Intern Med 2007;21:274–280

Clinical Stage, Therapy, and Prognosis in Canine Anal Sac Gland Carcinoma

Gerry A. Polton and Malcolm J. Brearley



J Vet Intern Med 2007;21:274–280

Clinical Stage, Therapy, and Prognosis in Canine Anal Sac Gland Carcinoma

Gerry A. Polton and Malcolm J. Brearley

Table 4. Clinical stage designations for dogs with canine anal sac gland carcinoma and associated summary survival statistics, cohorts A and B.

Clinical Stage	No.	No. Alive	% Alive	MST/Days	95% CI
			Cohort A		
Stage 1	14	5	36	1,205	690–1,720
Stage 2	13	5	38	722	191–1,253
Stage 3a	16	1	6	492	127–856
Stage 3b	20	1	5	335	253–417
Stage 4	13	0	0	71	6–136
			Log-rank test for trend: χ^2=35.203, P <.0001		
			Cohort B		
Stage 1	11	10	91	Not reached	N/A
Stage 2	5	4	80	Not reached	N/A
Stage 3a	13	7	54	448	386–590
Stage 3b	6	1	17	294	129–459
Stage 4	9	2	22	82	0–247
			Log-rank test for trend: χ^2=27.416, P < .0001		

MST, median survival time; 95% CIs, 95% confidence intervals; N/A, not applicable.

J Vet Intern Med 2007;21:274–280

Clinical Stage, Therapy, and Prognosis in Canine Anal Sac Gland Carcinoma

Gerry A. Polton and Malcolm J. Brearley

Table 4. Clinical stage designations for dogs with canine anal sac gland carcinoma and associated summary survival statistics, cohorts A and B.

Clinical Stage	No.	No. Alive	% Alive	MST/Days	95% CI
Cohort A					
Stage 1	14	5	36	1,205	690–1,720
Stage 2	13	5	38	722	191–1,253
Stage 3a	16	1	6	492	127–856
Stage 3b	20	1	5	335	253–417
Stage 4	13	0	0	71	6–136
Log-rank test for trend: χ^2=35.203, P <.0001					
Cohort B					
Stage 1	11	10	91	Not reached	N/A
Stage 2	5	4	80	Not reached	N/A
Stage 3a	13	7	54	448	386–590
Stage 3b	6	1	17	294	129–459
Stage 4	9	2	22	82	0–247
Log-rank test for trend: χ^2=27.416, P < .0001					

MST, median survival time; 95% CIs, 95% confidence intervals; N/A, not applicable.

J Vet Intern Med 2007;21:274–280

Clinical Stage, Therapy, and Prognosis in Canine Anal Sac Gland Carcinoma

Gerry A. Polton and Malcolm J. Brearley

Table 4. Clinical stage designations for dogs with canine anal sac gland carcinoma and associated summary survival statistics, cohorts A and B.

Clinical Stage	No.	No. Alive	% Alive	MST/Days	95% CI
			Cohort A		
Stage 1	14	5	36	1,205	690–1,720
Stage 2	13	5	38	722	191–1,253
Stage 3a	16	1	6	492	127–856
Stage 3b	20	1	5	335	253–417
Stage 4	13	0	0	71	6–136
			Log-rank test for trend: χ^2=35.203, P <.0001		
			Cohort B		
Stage 1	11	10	91	Not reached	N/A
Stage 2	5	4	80	Not reached	N/A
Stage 3a	13	7	54	448	386–590
Stage 3b	6	1	17	294	129–459
Stage 4	9	2	22	82	0–247
			Log-rank test for trend: χ^2=27.416, P < .0001		

MST, median survival time; 95% CIs, 95% confidence intervals; N/A, not applicable.

VSSO Retrospective Study

Hypotheses

- Surgical excision of sublumbar lymph node metastasis would result in a significantly improved survival time, regardless of the size and/or number of metastatic sublumbar lymph nodes

- Chemotherapy would not significantly impact overall survival time in dogs with apocrine gland anal sac adenocarcinoma

Materials and Methods

- A Veterinary Society of Surgical Oncology multi-institutional retrospective study
- 2003-2013

Materials and Methods

- History
- Physical examination
- Diagnostics
- Treatment
- Histopathology

Materials and Methods

- Followup
  - Medical records
  - rDVM and/or owner phone followup
  - Minimum 12 months followup
- Statistics

Results - Signalment

- 585 dogs
  - 86 Labrador Retrievers (13.7%)
  - 69 German Shepherd Dogs (11.8%)
  - 59 Cocker Spaniels (10.1%)
  - 38 Golden Retrievers (6.5%)
  - 18 Siberian Huskies (3.1%)
  - 16 Dachshunds (2.7%)

Results - Signalment

- 585 dogs
  - 306 males (278 neutered and 28 intact)
  - 249 females (226 spayed and 23 intact)

Results - Clinical Signs

- 47.1% incidental finding
- 53.0% symptomatic
- 36.9% mass
- 19.5% tenesmus
- 18.8% polyuria-polydipsia

Results - Diagnostics

- Hematology
- Serum biochemistry
  - 25.4% hypercalcemia

Results - Diagnostics

- 50.4% sublumbar lymph node metastasis (n=279)
- 5.2% distant metastasis

Results - Treatment

- Treatment for dogs with AGASAC confined to the anal sac
  - 48.6% anal sacculectomy
  - 41.4% anal sacculectomy and chemotherapy
  - 5.5% anal sacculectomy and radiation
  - 4.5% anal sacculectomy, chemotherapy and radiation

Results - Treatment

- Treatment for dogs with sublumbar lymph node metastasis
  - 16.9% anal sacculectomy only
  - 78.4% anal sacculectomy and SLLN excision
  - 1.2% surgery and chemotherapy
  - 3.5% surgery and radiation therapy
  - 0.4% surgery, chemotherapy and radiation therapy

Results - Treatment

- 10.8% complication rate following anal sacculectomy
  - 3.5% incisional dehiscence
  - 2.6% rectal perforation
  - 2.2% infection
  - 1.9% fecal incontinence

Results - Treatment

- Sublumbar lymph node excision
  - 75.0% dogs with sublumbar lymph node metastasis (n=237)
  - 12.1% complication rate
    - Hemorrhage (n=15; 6.3%)
    - Unresectable/residual disease (n=11; 4.6%)
    - Lymph node rupture (n=7; 3.0%)
    - Abdominal wall dehiscence (n=4; 1.7%)

Results - Treatment

- 52.4% adjuvant chemotherapy
- 11.5% adjuvant radiation therapy

Results - Histopathology

- Mitotic index
- Anisokaryosis and anisocytosis
- Vascular invasion
- Lymphatic invasion
- Scirrhosis
- Margins

Treatment - Outcome

- 8.4% of dogs had bilateral AGASAC
  - 53.5% bilateral AGASAC at diagnosis
  - 46.5% developed second-side AGASAC later
  - 5/16 Dachshunds had bilateral AGASAC (p=0.007)

Treatment - Outcome

- 18.5% local recurrence
  - 54.1% incomplete surgical margins
  - 45.9% complete surgical margins

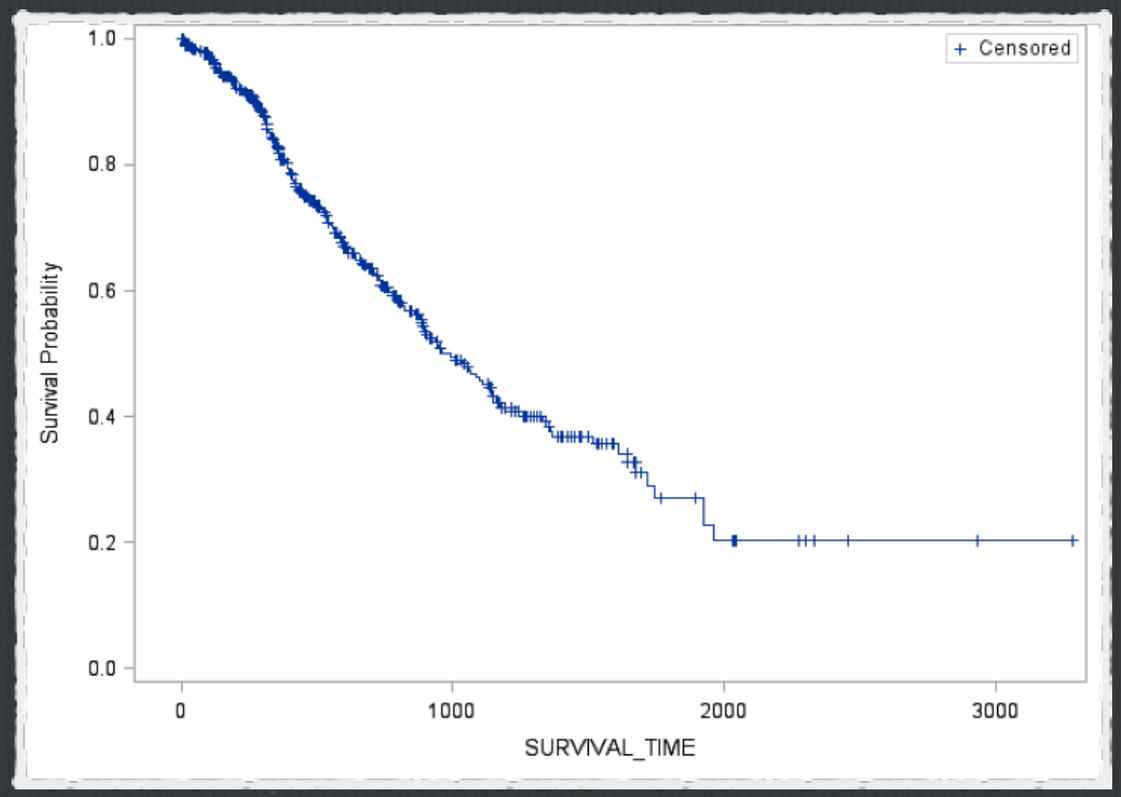
Treatment - Outcome

- Postoperative metastasis
  - 31.3% sublumbar lymph node metastasis
  - 13.7% distant metastasis

Treatment - Outcome

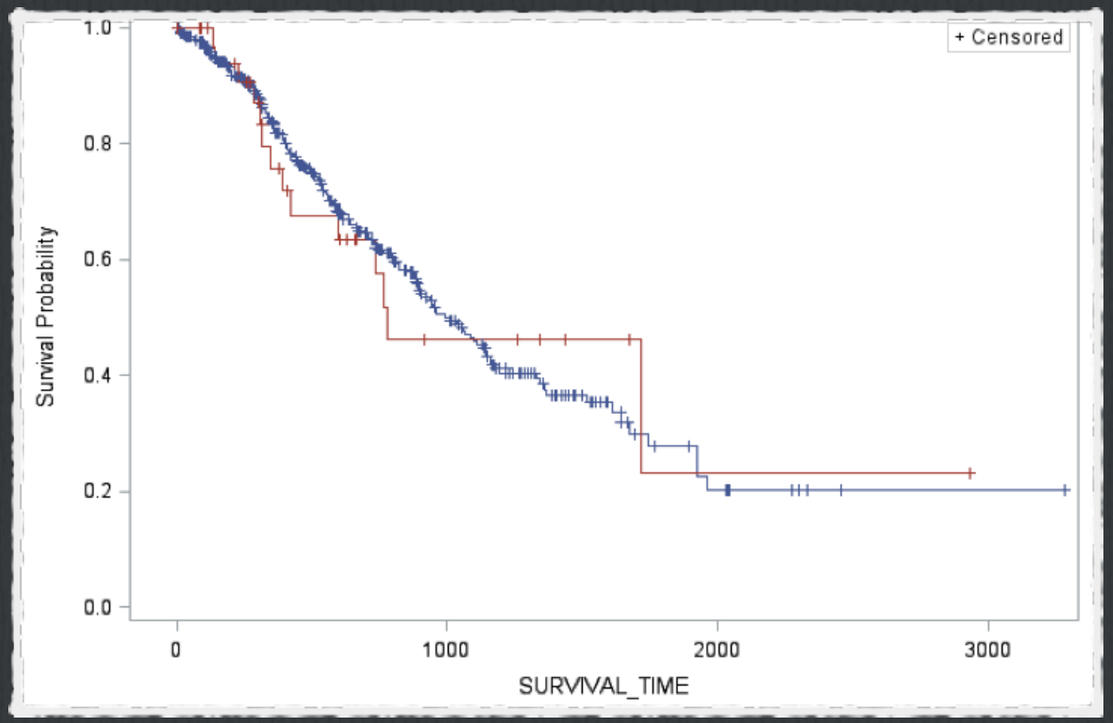
- 32.4% dogs alive
- 47.1% dogs died as a result of their disease
  - 18.6% anal sac
  - 55.2% sublumbar lymph node
  - 22.8% distant metastasis

Treatment - Outcome



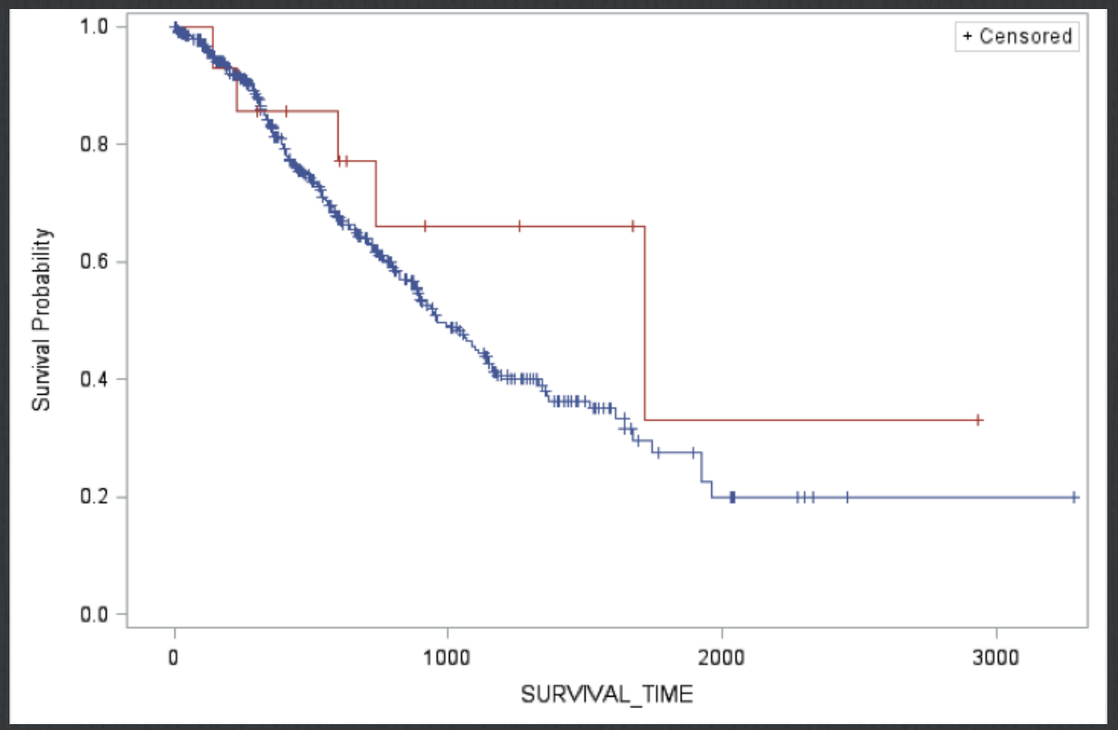
- Overall MST 960 days
- 1009 days for unilateral AGASAC
- 776 days for bilateral AGASAC

Treatment - Outcome



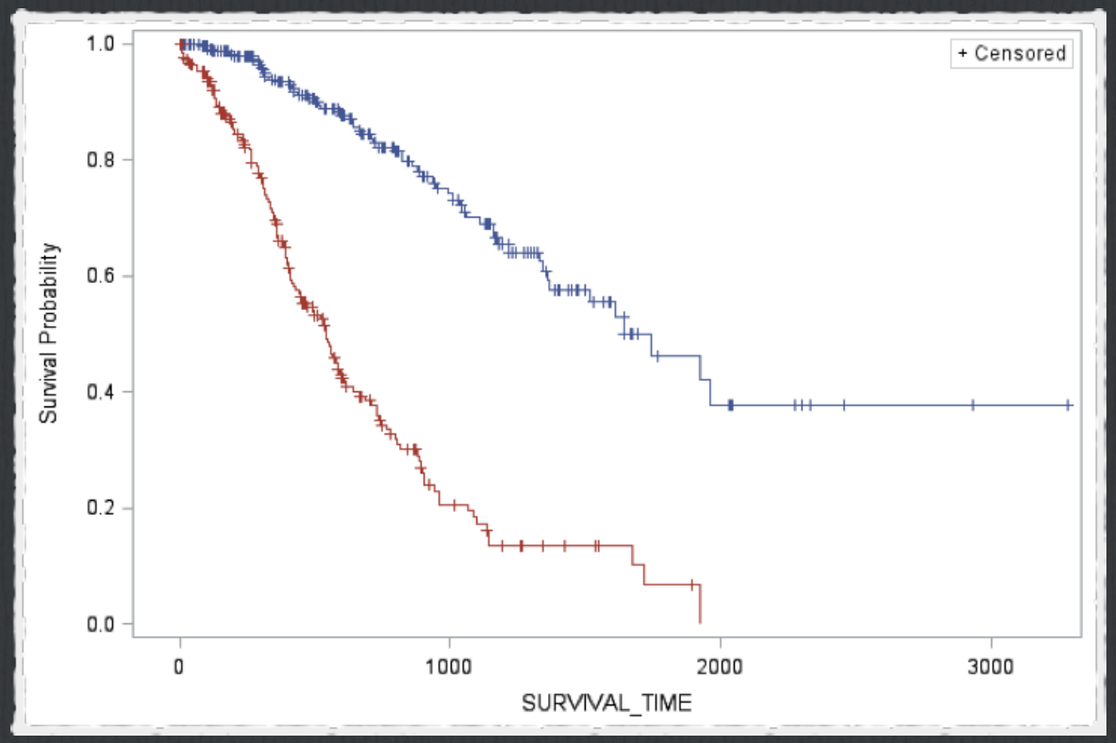
- Overall MST 776 days for dogs with bilateral AGASAC
- MST > 419 days for simultaneous bilateral AGASAC
- MST 1038 days for staged bilateral AGASAC

Treatment - Outcome



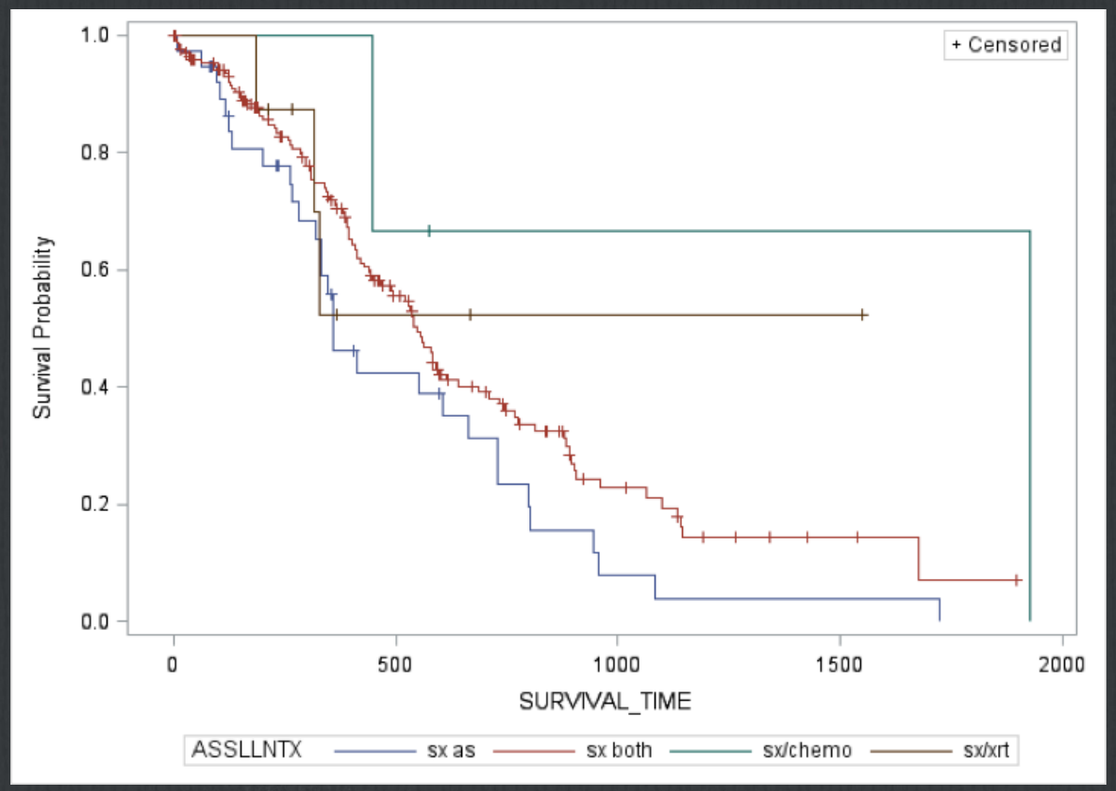
- MST > 1745 days if AGASAC confined to anal sac
- MST 540 days if AGASAC in anal sac and sublumbar lymph node
- $p < 0.0001$

Treatment - Outcome



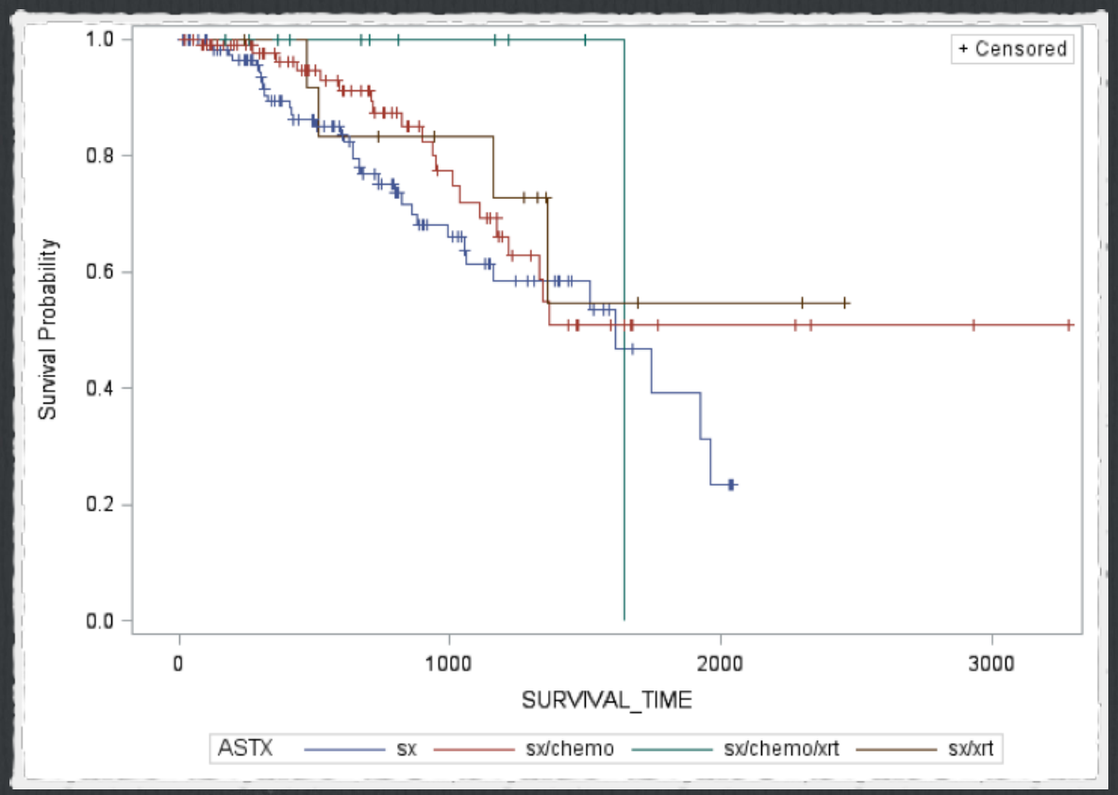
- MST > 1644 days if no metastasis at diagnosis
- MST 551 days if metastasis at diagnosis
- $p < 0.0001$

Treatment - Outcome



- MST 1612 days for anal sacculectomy alone
- MST > 1009 days for anal sacculectomy and chemotherapy
- MST > 1163 days for anal sacculectomy and radiation therapy
- p=0.19

Treatment - Outcome



- MST 358 days for anal sacculectomy alone
- MST 546 days for anal sacculectomy and SLLN excision
- MST 1927 days for surgery and chemotherapy
- MST > 317 days for surgery and radiation therapy
- p=0.06

Treatment - Outcome

- Hypercalcemia, p<0.0001
- Anal sac size, p<0.0001
- Metastasis at diagnosis, p<0.0001
- Sublumbar lymph node metastasis, p<0.001
- Distant metastasis, p<0.0001
- Bilateral anal sacculectomy, p=0.04
- Complications, p=0.05
- Incomplete excision, p=0.002

Conclusions

- Preliminary results

Conclusions

- AGASAC confined to the anal sac
  - Anal sacculectomy with no adjunctive therapy

Conclusions

- AGASAC metastatic to the sublumbar lymph nodes
  - Anal sacculectomy, sublumbar lymph node excision, and adjunctive chemotherapy

Questions?

Alta Vista
ANIMAL HOSPITAL

VSSO
VETERINARY SOCIETY OF SURGICAL ONCOLOGY

Veterinary Society of Surgical Oncology (www.vsso.org)
animalcancersurgeon@icloud.com

VSSO OnCensus

A true boutique conference

February 1-3, 2016, Napa Valley, CA, USA

Reaching consensus in veterinary oncology