

Intraoperative Registration of Pathology for Postoperative Radiotherapy

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Goal:

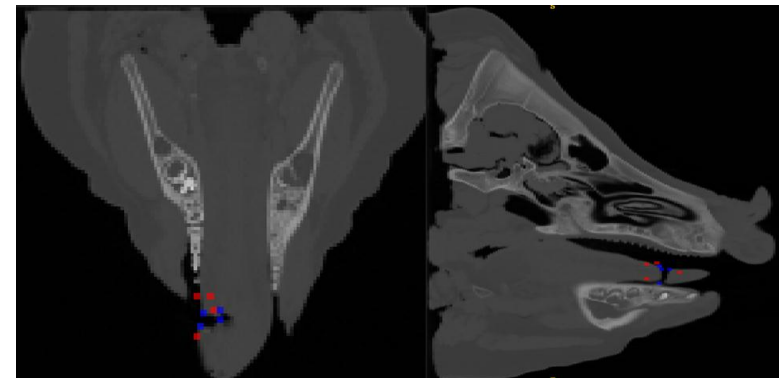
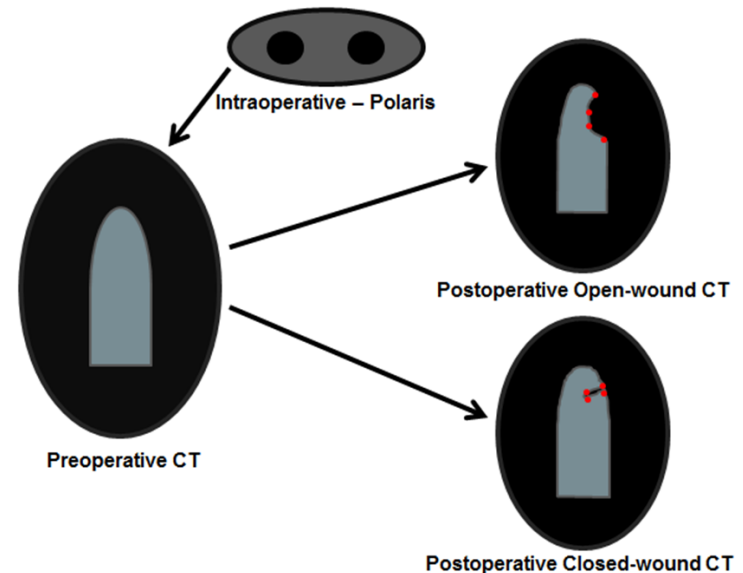
Provide method of evaluating tissue deformation after surgical resection using intraoperative tracking and image registration

Significance:

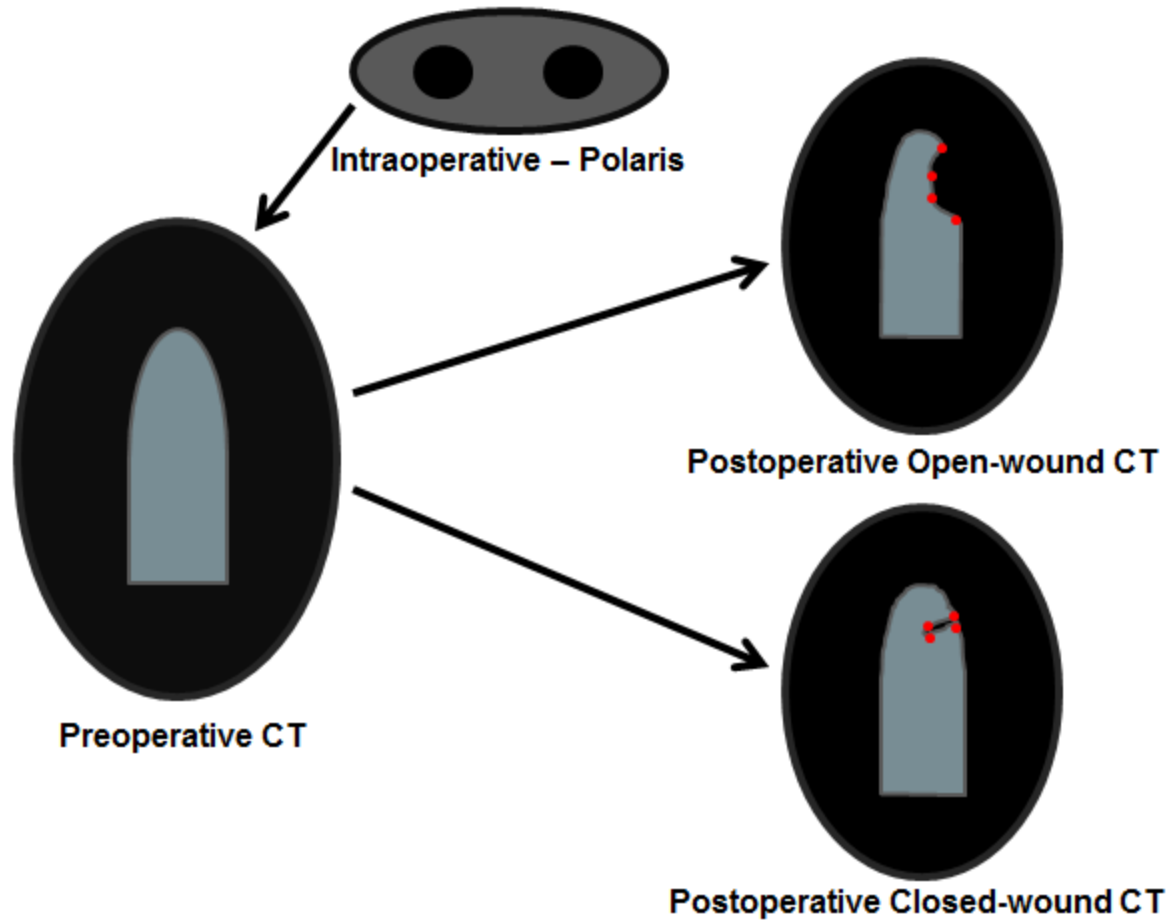
Improved localization of remaining cancer allows smaller volume of radiation, reduces radiation poisoning/related side effects

Results:

Achieved intraop registration and beginnings of registration from preop to postop images showing tissue deformation; further work needed



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- Accuracy of intraoperative registration via RMS

| Pig | Preop Fiducials(mm) | Open Fiducials (mm) | Open Tongue marks (mm) |
|-------|---------------------|---------------------|------------------------|
| 1 | 4.12 | 3.64 | 1.95 |
| 2 | 3.99 | 4.01 | 6.75 |
| 3 | 6.49 | 5.07 | 3.90 |
| Total | 8.66 | 7.42 | 8.03 |

- Accuracy of registration preop to postop closed

| Pig | Clip 1 | Clip 2 | Clip 3 | Clip 4 | Total |
|-----|--------|--------|--------|--------|-------|
| 1 | 21.6 | 21.7 | 19.5 | 22.3 | 21.3 |
| 2 | 24.7 | 23.8 | 25.9 | 24.1 | 24.6 |
| 3 | 23.5 | 30.0 | 13.7 | 30.5 | 25.3 |
| | | | | Avg: | 23.8 |

- Accuracy of registration postop open to preop to postop closed

| Parameter Set: | Avg Fiducial RMS (Rigid) (mm) | Avg Tongue RMS (Deform.) (mm) |
|--------------------|-------------------------------|-------------------------------|
| STD, AMS | 20.70 | 21.07 |
| STD, AMS2 | 20.14 | 20.68 |
| STD,AMS, fixed pts | 7.47 | 18.92 |



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