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Introduction

- Dog bite injuries comprise a small but significant portion of ED and hospital admissions annually.¹
- Young children are especially susceptible to severe cranial injury from dog bite due to their thin craniofacial bones and little ability to defend themselves.²
- This study reviews the management of ten patients admitted to Children's Hospital of New Orleans for skull fractures secondary to dog bites.
- This study aims to add more data to existing literature and provide a basis for crafting an evidence-based algorithm for the neurosurgical management of pediatric dog bite injuries to the head.

Patient Demographics

- Patient age ranged from 2 weeks to 3 years with a median age of 20.5 months.
- Male to female ratio was 1:1 in our study cohort.
- 6 of 10 patients were Caucasian; 4 of 10 were African American

Results

Table 1. Pediatric Skull Fractures Due to Dog Bite Injury, n=10

Clinical Outcomes	
Transfer From Outside Hospital	60%
Median LOS	5.5 days
Median Time to Follow-Up Visit	15.5 days
Incidence of Infection	10%
Administration of IV Antibiotics	100%
Demographics of Attacking Dog	
Pitbull Breed	60%
Attacking Dog Known to Patient/Family	90%
Attacking Dog Owned By Patient/Family	50%

Discussion/Conclusions

- The management of cranial dog bite injury in pediatric patients often requires collaboration among different surgical and non-surgical subspecialties.
- A standard management protocol for pediatric cases of cranial dog bite injury does not exist. The following considerations should be standardized in such a protocol.
 - Initial antibiotic coverage
 - Ampicillin-sulbactam was the most widely used antibiotic in this study, and only 1 of 10 patients developed an infection from dog bite injury.
 - Indications for obtaining CT or MRI imaging
 - Palpable skull fracture or hematoma
 - Altered mental status
 - Persistent fever refractory to IV antibiotics
 - Age \leq 6 months

Management of Pediatric Skull Fractures Secondary to Dog Bite

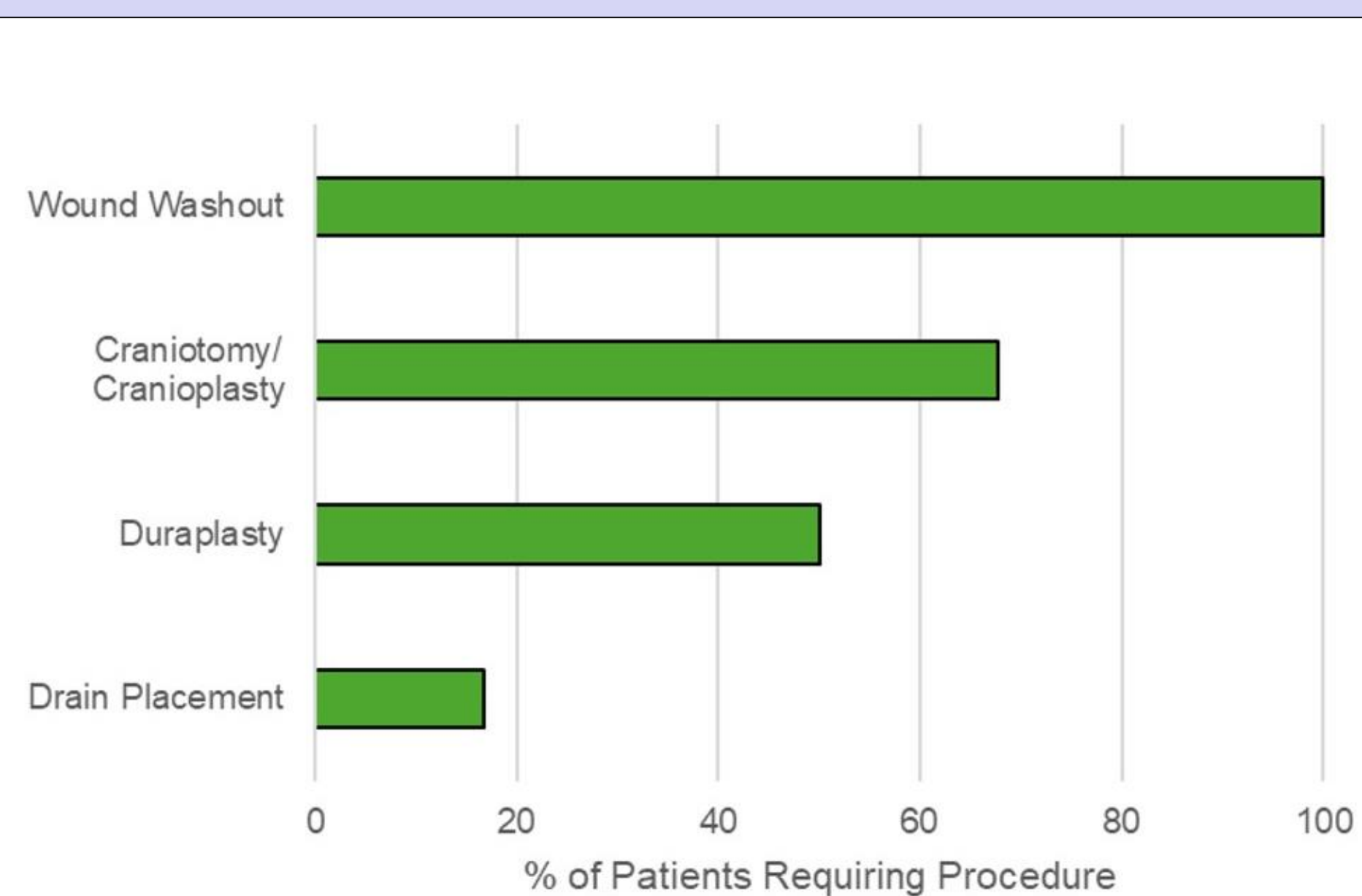


Figure 1. Neurosurgical procedures performed in all patients requiring neurosurgery (n=6).

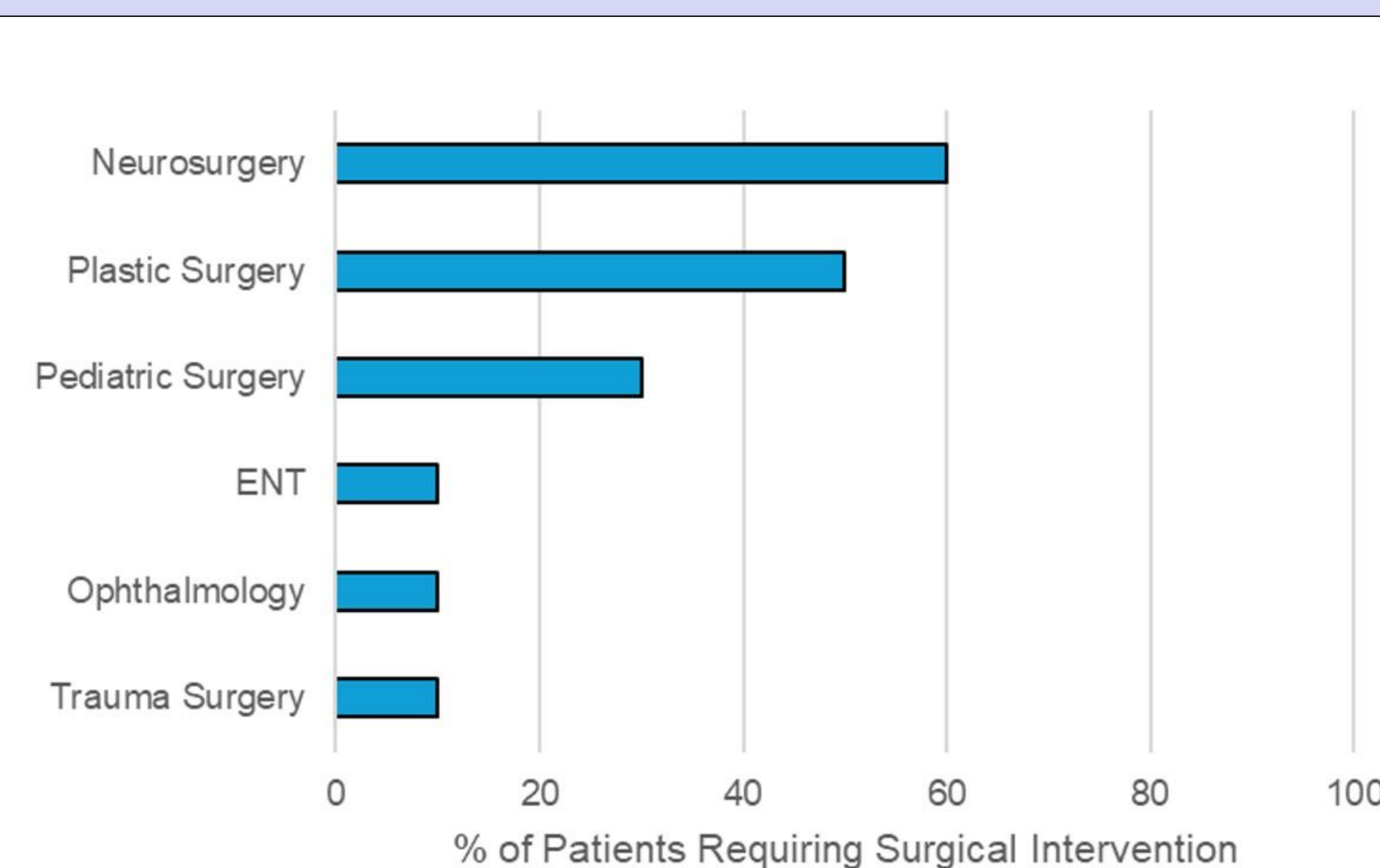


Figure 2. Specialties involved in surgical interventions performed in all patients (n=10). 100% of patients required surgery of any kind. 50% of patients required surgical intervention by multiple specialties.

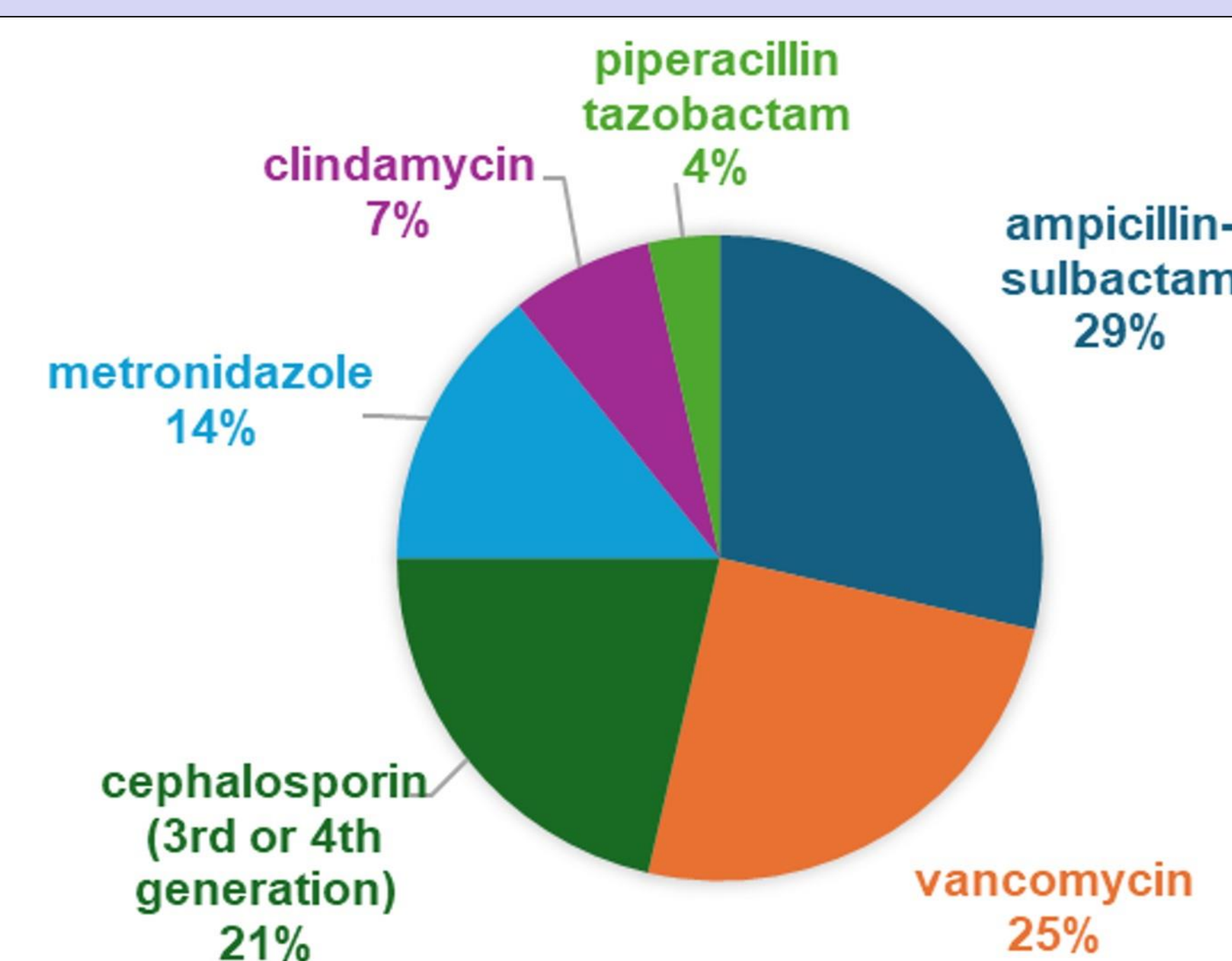


Figure 3. Frequency of antibiotics used in infection prophylaxis regimen (n=28). 90% of patients received an antibiotic regimen consisting of multiple pharmacotherapies.

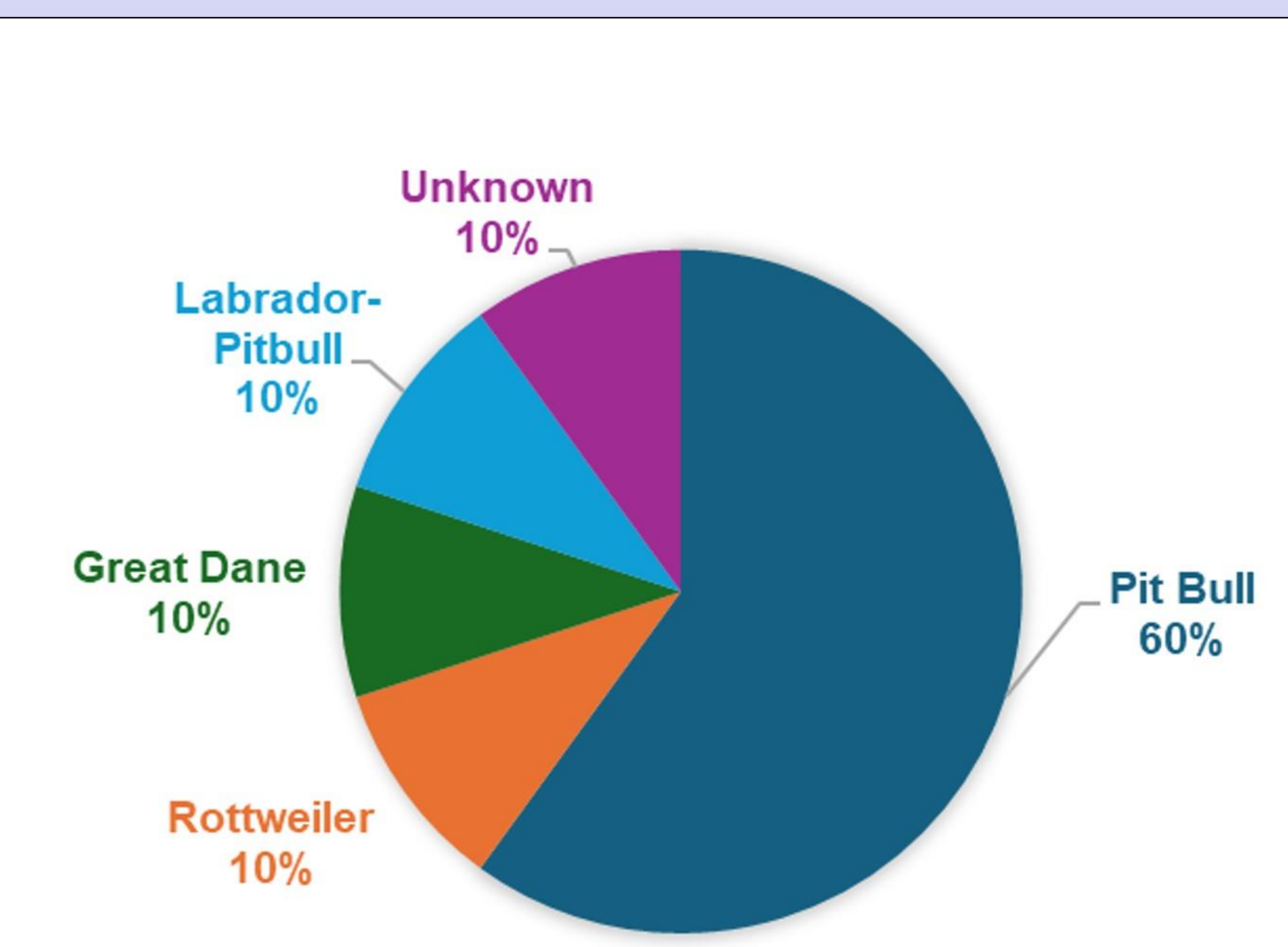


Figure 4. Breed of attacking dog in all cases (n=10)

Illustrative Cases

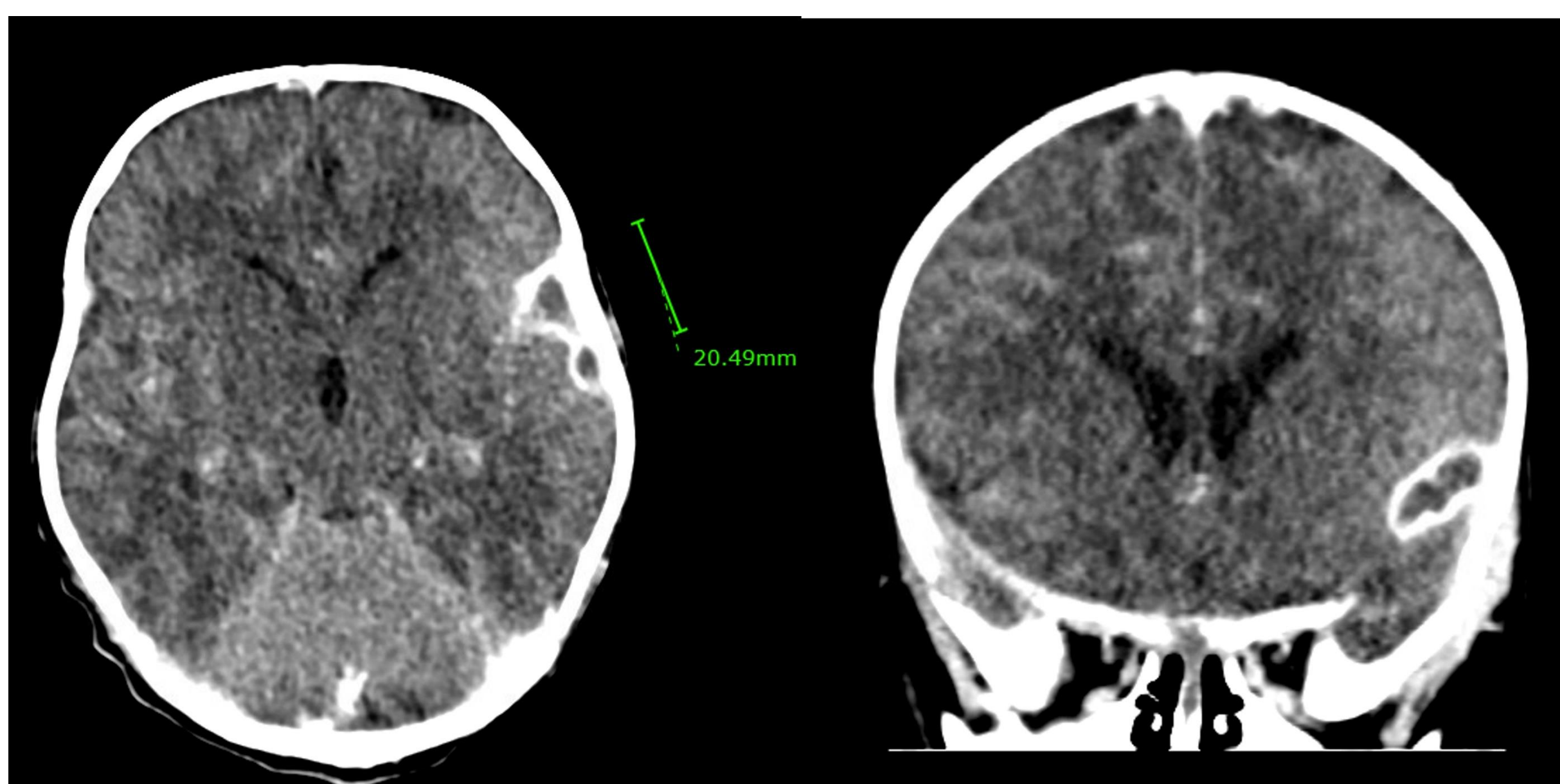


Figure 5. Pre-operative imaging from a 3-week-old male who underwent a craniotomy and wound washout after developing a temporal epidural abscess and skull fracture from a dog bite injury. This patient initially presented to the ED with high fever and a scratch on his head from a dog bite. He was treated for *Pasteurella* meningitis with a 21-day course of ampicillin-sulbactam. CT imaging was not obtained until HD#14 when neurosurgery was consulted. Postoperatively, this patient healed well with resolution of infection, and he was discharged on POD#8 with a total hospital stay of 22 days.

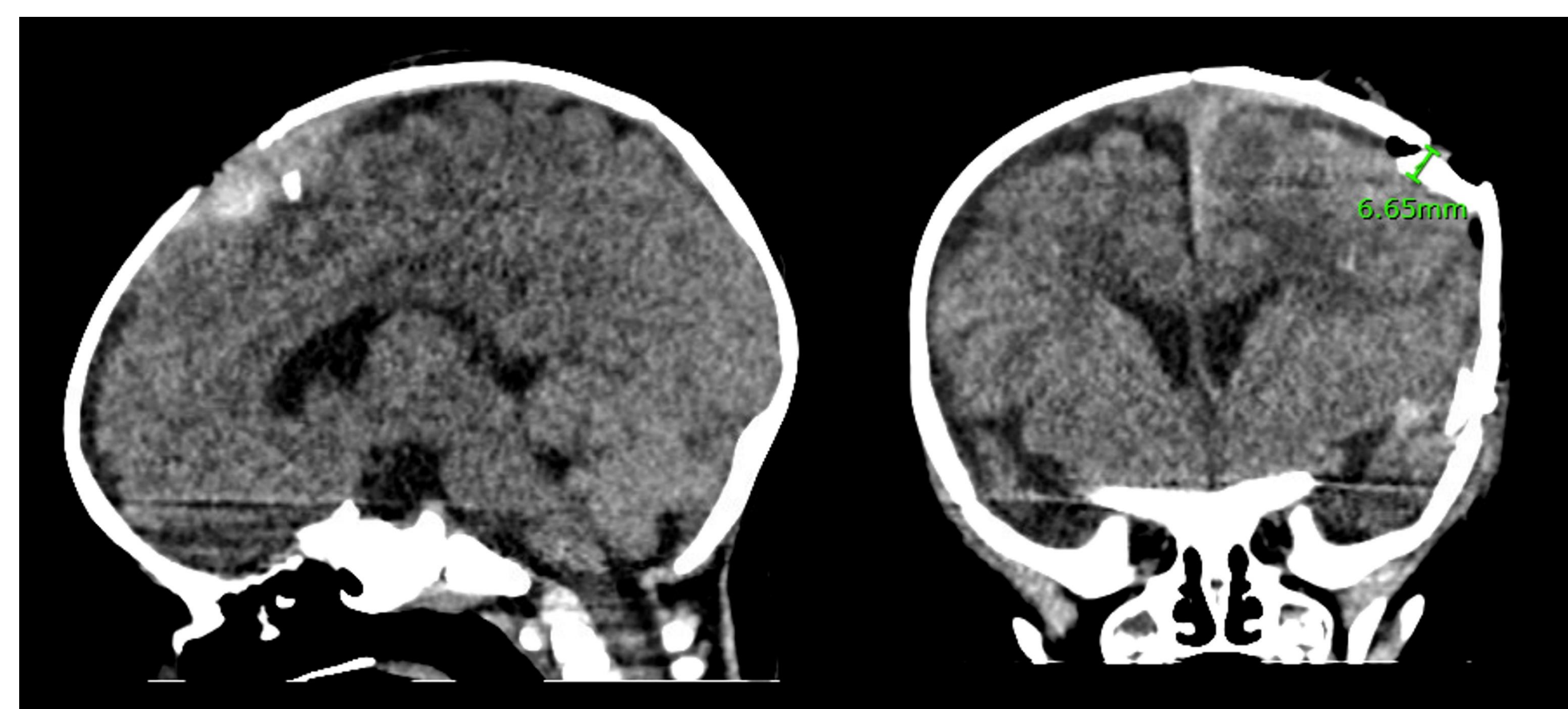


Figure 6. Pre-operative imaging of a 4-month-old male who developed multiple calvarial fractures, including a 6mm depressed parietal fracture with underlying subarachnoid hemorrhage and mild mass effect due to multiple dog bites to the head. This patient was taken for an emergent craniotomy, washout, and laceration repair by neurosurgery and plastic surgery. Postoperatively, the patient was treated first with ampicillin-sulbactam and then with ceftriaxone, metronidazole, and vancomycin. The patient developed seizure activity on HD#5 and was started on Keppra, which was continued after discharge.

Limitations/Future Directions

- Limitations to this study include a small cohort size and inclusion of data from a single institution.
- Multi-institutional studies would provide a large cohort needed to develop an evidence-based algorithm for management of pediatric cranial injury secondary to dog bite.

Acknowledgements

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References

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