

CASE OF THE MONTH

An interactive approach to case-based
learning in oral pathology

Presented By: Renee Ismail

Educational Diagnostic Sciences Team



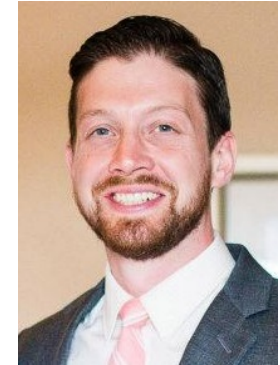
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Project PI



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Ramaswamy,**
Curriculum
Assessment



Daniel Kiskis
Business Systems
Analyst Lead

Dental School Curriculum Overview: Diagnostic Sciences

- 4-5 courses throughout dental education
- Oral/systemic related disease presentations
- Forming differential diagnosis
- Biopsy/Histology
- Referral
- Patient Management
- Practical application in the clinics

How did we get here?

- Aim to integrate Oral Pathology material learned
- To build a strong foundation in diagnostic sciences
- Responsibility to be competent in the assessment and management of pathological conditions affecting the oral and maxillofacial region
- Students want more opportunity for clinical application

What is Case of the Month?

- Novel method using technology to present a monthly comprehensive patient case
 - Case provided through UMSOD biopsy service
 - Opportunity to self diagnose
 - Reference resource
 - Study guide
- Sense of Community
- Audience
 - Dental students, Residents, Faculty, Alumni

C-tools

- Interface used for online modules
- User friendly
- School wide access
- Incorporate into courses
- Interactive component
- Data tracking
- Not open to the public dental community

Monthly Case Example

MiTools | Inbox (2) - rtripon@umich | CTools : DENT Case Of the



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DENT 755B 001 W15 | DENT 757 001 W15 | IPE Team-Based Decisions | HCD Pathway | Class of 2016 | **DENT Case Of the Month**

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Clinical Case | Site Info | Help



Welcome to the Dentistry Case of the Month

Each month, we will present a case and provide clinician notes along with clinical, radiographic, and histological images.

You will have a chance to test your knowledge on the diagnosis, patient management, and treatment, and compare with the actual clinical outcomes.

Cases are presented in the form of a series of questions and discussion (which we strongly encourage you to complete). The first time you view a case, you will be prompted to answer the questions. If you would like to return to a case in the future, please use the "Review" link. This is a NON-graded learning experience

Click on the **Clinical Case** tool to access the cases.


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Identifier

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 Part 1 of 4 Who am I? (worth 0 points)

Question 1 of 9

I am:

- A. A D1 or D2 student
- B. A D3 or D4 student
- C. A Dental hygiene student
- D. A resident (perio, ortho, etc)
- E. faculty

 Review

Check to review before finishing (will be flagged in Table of Contents)

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CTools Gateway | Contact Us / Suggestions | ITS Teaching & Learning | University of Michigan | The Sakai Project | Acknowledgments
Copyright © 2003 - 2014, the Regents of The University of Michigan CTools - 2.9P_315058 - 17 - Sakai 2.9.2 (Kernel ctools-1.3.2)- Server torrent

Pre- Case Question

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CTools - Project Site

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Working on Test

September 2014

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Part 2 of 4 Introduction (worth 1 point)

Question 2 of 9 (worth 1 point)

Which group of lesions should be included in the differential diagnosis of a well-defined, inter-radicular, radiolucent lesion associated with vital teeth?

- A. Periapical Cyst, Keratocystic odontogenic tumor (KCOT previously known as OKC: odontogenic keratocyst), Dentigerous Cyst
- B. Lateral Periodontal Cyst, Keratocystic odontogenic tumor (KCOT previously known as OKC: odontogenic keratocyst), Ameloblastoma
- C. Periapical Granuloma, Periapical Cyst, Lateral Radicular Cyst
- D. Periapical Granuloma, Lateral Periodontal Cyst, Keratocystic odontogenic tumor (KCOT previously known as OKC: odontogenic keratocyst)

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Clinical Presentation

Clinical Findings:

On clinical examination the patient presented with a 1 year history of a mass on the left anterior mandible and has increased in size over the past 3-4 months. Patient was asymptomatic. His anterior vestibule was distended with the free gingival margin to be obliterated and displacement of teeth # 26 and # 27 was noted. The lesion was exophytic, smooth, non-ulcerated, firm upon palpation and the color was similar to that of adjacent mucosa. Teeth # 26 and # 27 were vital and demonstrated mobility (Figure 1).

Figure 1: Patient presentation at time of incisional biopsy



Radiographic Findings:

The lesion is an oval shaped, well-defined, corticated radiolucency with an epicenter equidistant from the apices of tooth # 26 and # 27. Significant displacement/root divergence of teeth # 26 and # 27 is noted (Figure 2). Figure 2: Panoramic radiograph at time of initial presentation.

Radiographic Findings



Radiographic Findings:

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Incisional Biopsy:

An incisional biopsy was taken (Fig. 3) and submitted in formalin. 1 month later the patient returned for an excisional biopsy where the specimen was sent to oral pathology for review. The patient was given home care instructions and scheduled for follow up.

Figure 3: Clinical image after incisional biopsy



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Histological Interpretation

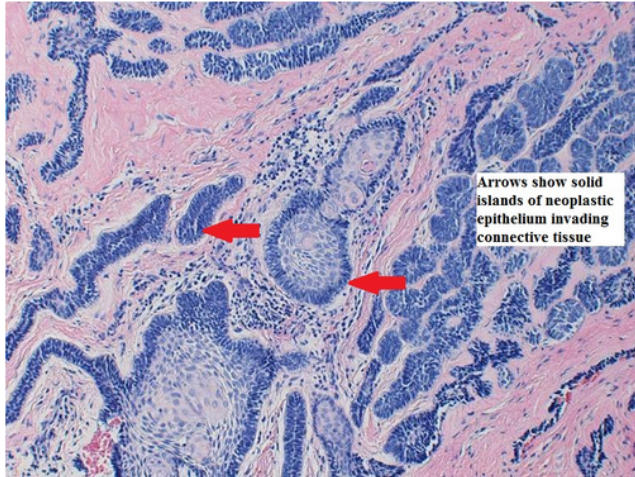
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Histological Interpretation:

A biopsy of the mass reveals islands of odontogenic epithelium in a mature fibrous connective tissue stroma (Fig 4). The central region of epithelial nests resemble the stellate reticulum of an enamel organ and contain loosely arranged angular cells which, in areas, have undergone squamous differentiation (See * Fig 5). These nests are surrounded by a single layer of tall columnar ameloblast like cells with nuclei located at the opposite pole of the basement membrane (Reverse polarization; see arrow, Fig 5). Nuclear palisading (nuclei are parallel to each other and perpendicular to the basement membrane) at the periphery of the neoplastic epithelial nests is noted. (Fig. 4 & 5)

Figure 4. Low power histological image



Arrows show solid islands of neoplastic epithelium invading connective tissue

Figure 5. Higher power histological image

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Make the Diagnosis

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- Address Bar:** <https://ctools.umich.edu/portal/site/518d0f59-8dea-4847-8c44-02191f252c65/page/ce806b0d-bbfd-4920-a6ca-939b3986d1c8>
- Page Header:** DENT Case Of the Month: Test Center Help
- Navigation Bar:** Assessments | Question Pools | Grading | Test Drive
- Section:** Working on Test
September 2014
- Buttons:** Prev, Table of Contents, Next, Continue Later, Finish, Instructions
- Section:** Part 3 of 4 Diagnosis (worth 1 point)
- Section:** Question 3 of 9 (worth 1 point)
- Text:** Make the diagnosis
- List-Group:**
 - A. Keratocystic Odontogenic Tumor (previously, odontogenic keratocyst)
 - B. Lateral periodontal cyst
 - C. Ameloblastoma
 - D. Giant cell granuloma
- Section:** Review
- Text:** Check to review **before** finishing (will be flagged in Table of Contents)
- Buttons:** Prev, Table of Contents, Next, Continue Later, Finish, Instructions
- Taskbar:** CTools DENT Cas...html, Show all downloads..., 9:00 PM 1/25/2015

Final Diagnosis Discussion

Part 4 of 4 Discussion (worth 0 points)

Discussion:

The main features to focus on in this case are middle aged male with 1 year duration of swelling, rapidly increasing in size causing displacement of associated teeth. The radiographic appearance of a well-defined corticated radiolucency in the mandibular pre-molar/ canine area could include inflammatory as well as developmental processes. The most common inflammatory lesions with a radiographic appearance similar to our case presented include periapical or lateral radicular cyst and periapical granuloma. However in the presence of vital teeth, these lesions can be excluded. The appearance of an inter-radicular well-defined corticated radiolucency associated with vital teeth is consistent with that of developmental cysts. The location is consistent with that of a lateral periodontal cyst or a keratocystic odontogenic tumor (KCOT, previously, odontogenic keratocyst). Large lateral periodontal cysts can displace teeth and cause expansion, as observed in this case, and may be multilocular (botryoid variant). KCOTs usually do not cause the degree of buccal-lingual expansion observed in this case as they tend to along the path of least resistance. Other developmental cysts include calcifying odontogenic cyst which presents with radiopacities in 30-50% of cases and glandular odontogenic cyst which as a rare developmental cyst that can demonstrate aggressive clinical behavior. Among the odontogenic tumors, considering the radiographic appearance and location of this lesion, ameloblastoma is at the top of the differential diagnosis.

Ameloblastoma:
An Ameloblastoma is characterized as a benign tumor of the jaw arising from odontogenic epithelium. Is it more commonly seen in the mandible as opposed to the maxilla. Patients will present between ages 20-60 with an average of 33 years and male and female predilection is equivalent. Approximately 20% of ameloblastomas are associated with an impacted tooth and can cause painless but significant buccal-lingual expansion. Ameloblastomas are slow growing but locally aggressive and have the capability to destroy tissue in a fairly short matter of time once they have begun to expand. Radiographically, ameloblastomas will present as unilocular radiolucent lesions if they are small and multilocular "soap bubble appearance" if they are large. It has the ability to displace teeth and can cause root resorption, though associated teeth remain vital.

Table 1: Benign odontogenic tumors to consider and characteristics that are consistent (pros +) and inconsistent (-cons) with this case presentation

Differential Diagnosis:	Pros +	Cons -
Ameloblastoma	<ol style="list-style-type: none"> 1. Age 20-60 years 2. Buccal-lingual expansion 3. Location- mandible 4. Histology 	<ol style="list-style-type: none"> 1. Location Anterior Mandible only 10%
Adenomatoid Odontogenic Tumor (AOT)	<ol style="list-style-type: none"> 1. Circumscribed Unilocular RL 	<ol style="list-style-type: none"> 1. Calcifications (opacities) 2. Age 10-19 years

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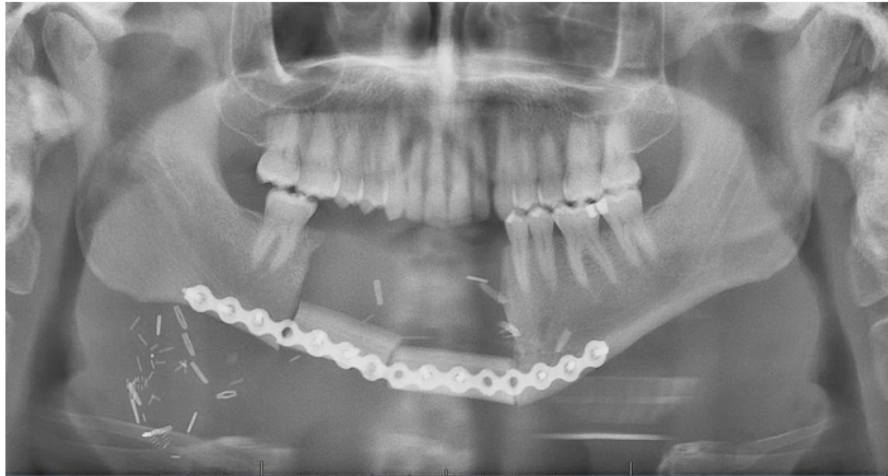
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Patient Management

Dr. Persico referred the patient to The Department of Oral and Maxillofacial Surgery for further assessment and definitive treatment. Dr. Ward resected the lesion including the inferior border of the mandible. Following grafting and reconstruction using a free fibular graft, the patient was referred to Dr. Munz (Hospital Dentistry) for further reconstructive procedures. With stability of the fibular and after a period of healing and integration, 5 dental implants will be placed in the mandible with further debulking of the soft tissue paddle of the flap and vestibuloplasty for improved access for daily hygiene. An implant-retained fixed hybrid prosthesis would be fabricated on top of multi-unit abutments, with angulation as necessary.

Figure 7. Panoramic view after resection:



PLEASE SEE FOLLOWING QUESTIONS ON NEXT PAGE REGARDING THE FINAL DIAGNOSIS AND DISCUSSION. THANK YOU!

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CE-Like Post Case Questions

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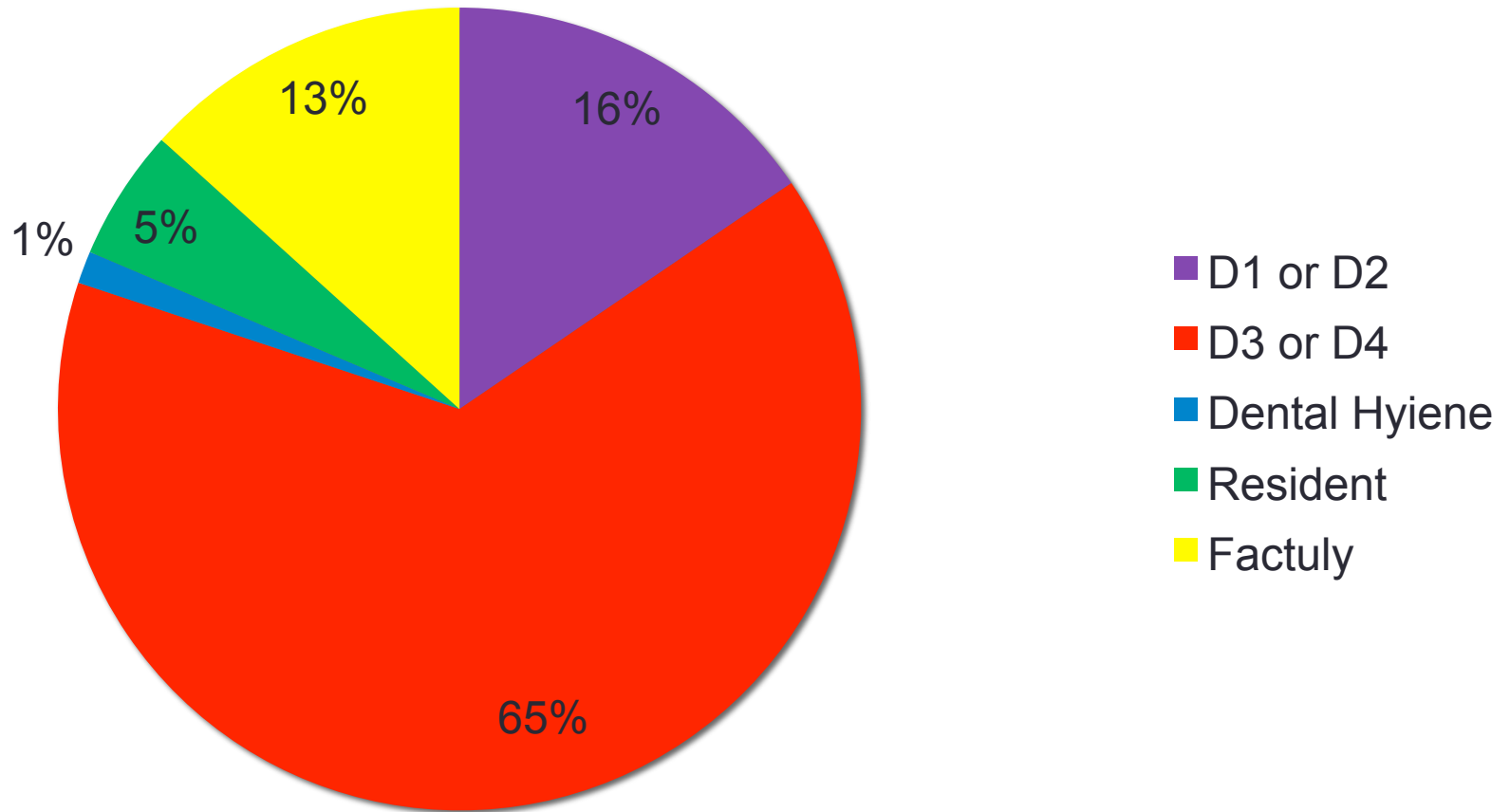
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- Address Bar:** <https://ctools.umich.edu/portal/site/518d0f59-8dea-4847-8c44-02191f252c65/page/ce806b0d-bbfd-4920-a6ca-939b3986d1c8>
- Page Header:** UMSOD resources, More Sites
- Left Navigation:** Home, Clinical Case (highlighted), Site Info, Help
- Main Content:**
 - DENT Case Of the Month: Test Center** (with a Help link)
 - Assessments | Question Pools | Grading | Test Drive
 - Working on Test** (September 2014)
 - Navigation buttons: Prev, Table of Contents, Next, Continue Later, Finish, Instructions
 - Part 4 of 4 Discussion** (worth 6 points)
 - Question 4 of 9** (worth 1 point)
 - Question text: Which group of lesions should be included in the differential diagnosis of a well-defined, inter-radicular, radiolucent lesion associated with vital teeth?
 - Options:
 - A. Periapical Cyst, Keratocystic odontogenic tumor (KCOT previously known as OKC: odontogenic keratocyst), Dentigerous Cyst
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 - C. Periapical Granuloma, Periapical Cyst, Lateral Radicular Cyst
 - D. Lateral Radicular Cyst, Lateral Periodontal Cyst, Ameloblastoma
 - Review** section with a checkbox: Check to review before finishing (will be flagged in Table of Contents)
 - Bottom navigation buttons: Prev, Table of Contents, Next, Continue Later, Finish, Instructions

The Windows taskbar at the bottom shows the time as 9:02 PM on 1/25/2015 and includes icons for various applications like Chrome, Word, and PowerPoint.

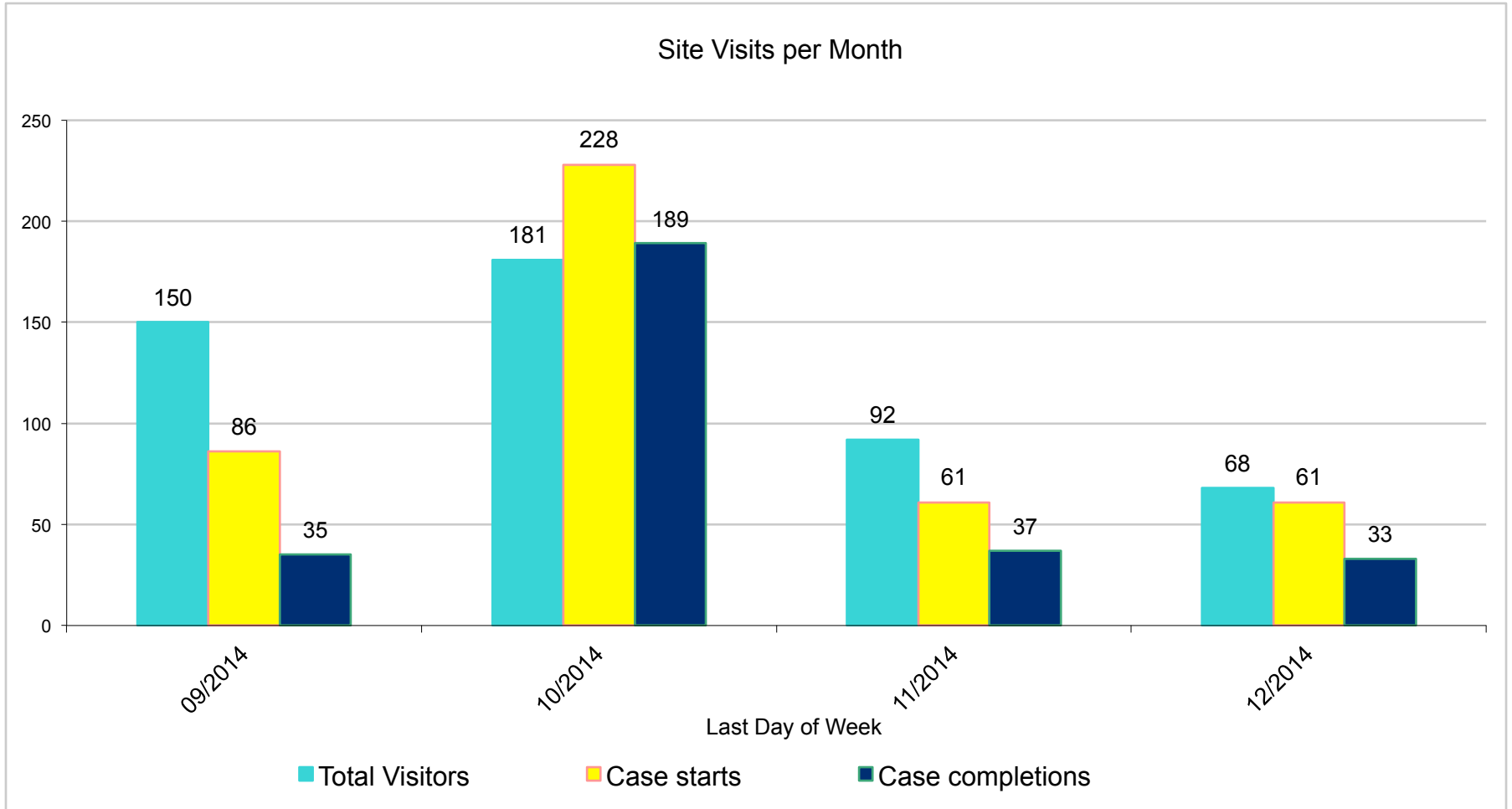
Seminars

- Presentation of past 4 case reports
- Interactive audience
- Reinforce material covered
- Survey distribution
 - Q's for online learning module
 - Q's for seminar case presentations

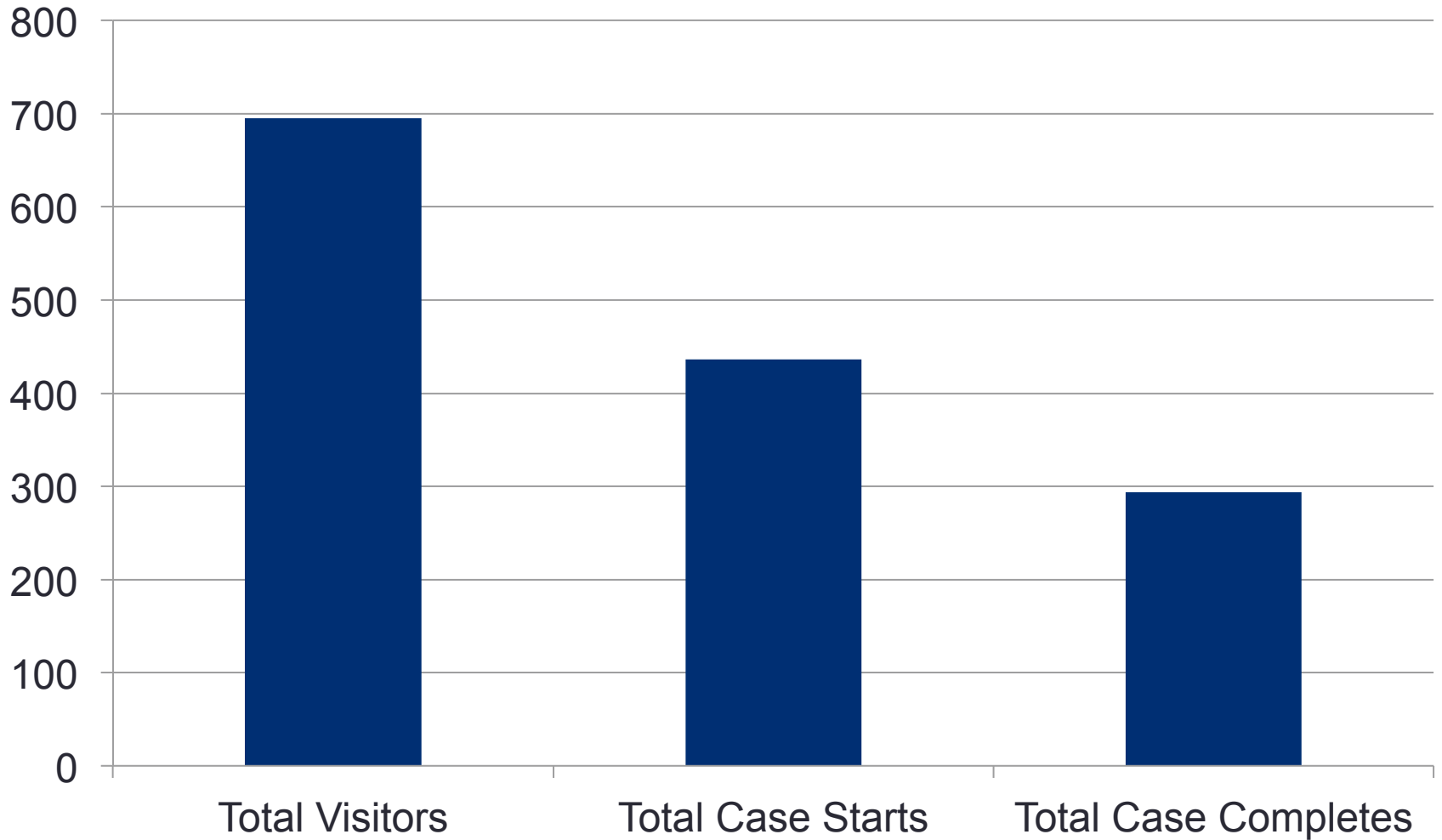
User Distribution



Site Visits Monthly



Case Completion

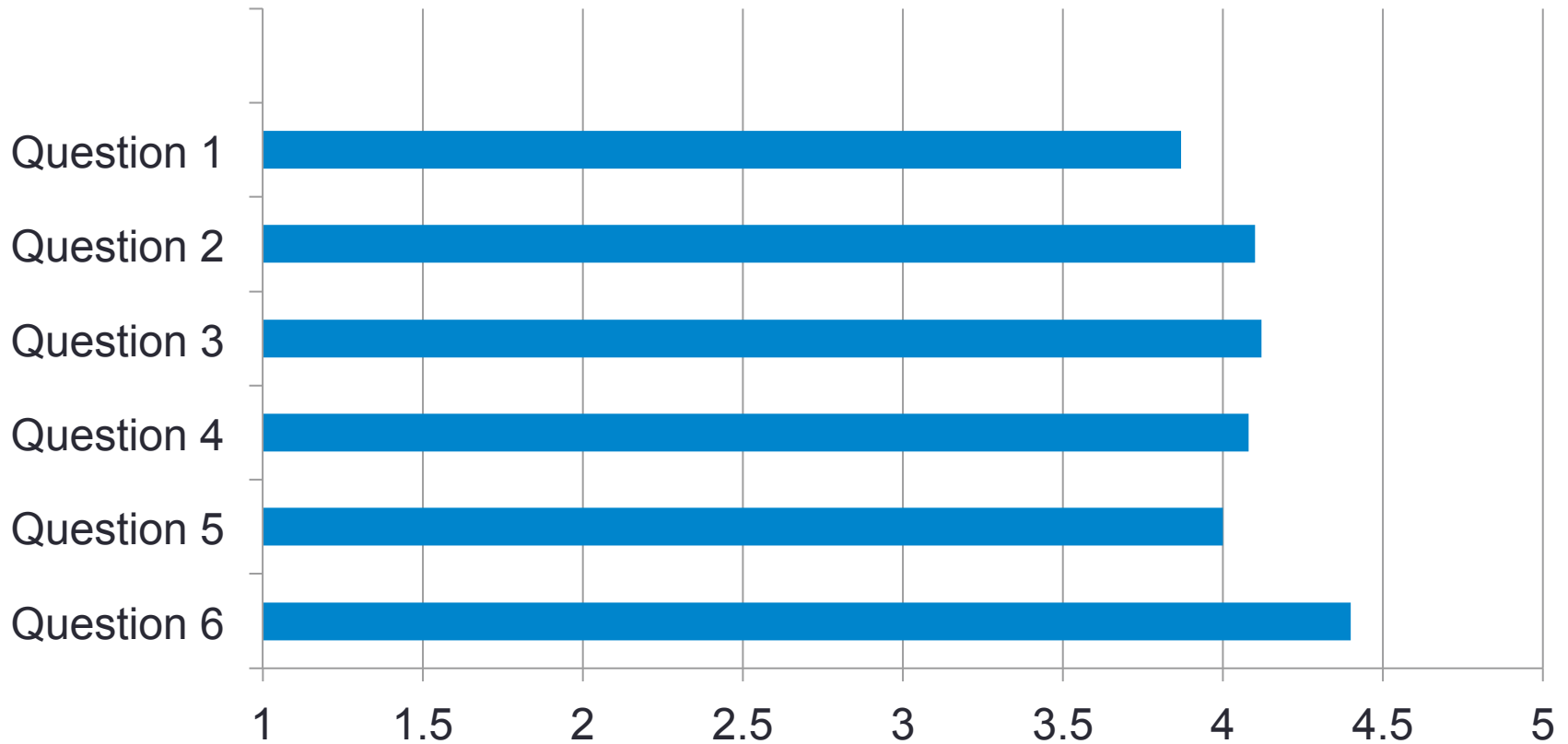


Survey Q's Related to Online Module

- 1) Increased my ability and confidence to evaluate patients
- 2) Clarify key concepts in diagnostic sciences including pathology and radiology
- 3) Integrate and apply material presented in Diagnostic Sciences courses
- 4) Integrate and apply material presented in other School of Dentistry courses
- 5) The CE-like questions helped reinforce concepts presented in case reports
- 6) This is an excellent resource

Survey Q's Results

Question Scores : Average score/ 5
N=92



Future progress

- Increase monthly completion of cases
 - Awareness
 - Stress application
 - Incentives
- Incorporation into courses
- Data collection
 - Time usage
 - Repeat viewers
- Public access
 - New online interface

THANK YOU!