

Interventional Balloon Kyphoplasty in Multiple Myeloma Patients

Student Researcher: Mary Dziadosz

Faculty Advisor: Dr. Elaine Halesey, Ed.D., R.T.(R)(QM)

What is Balloon Kyphoplasty (BKP)?

- A minimally invasive interventional radiologic procedure
- Preferred treatment for patients with vertebral compression fractures; the most common include patients with multiple myeloma and osteoporotic women
- BKP involves cement inserted through a balloon into the vertebrae. Procedure is done with general anesthesia and localized numbing

What is Multiple Myeloma (MM)?

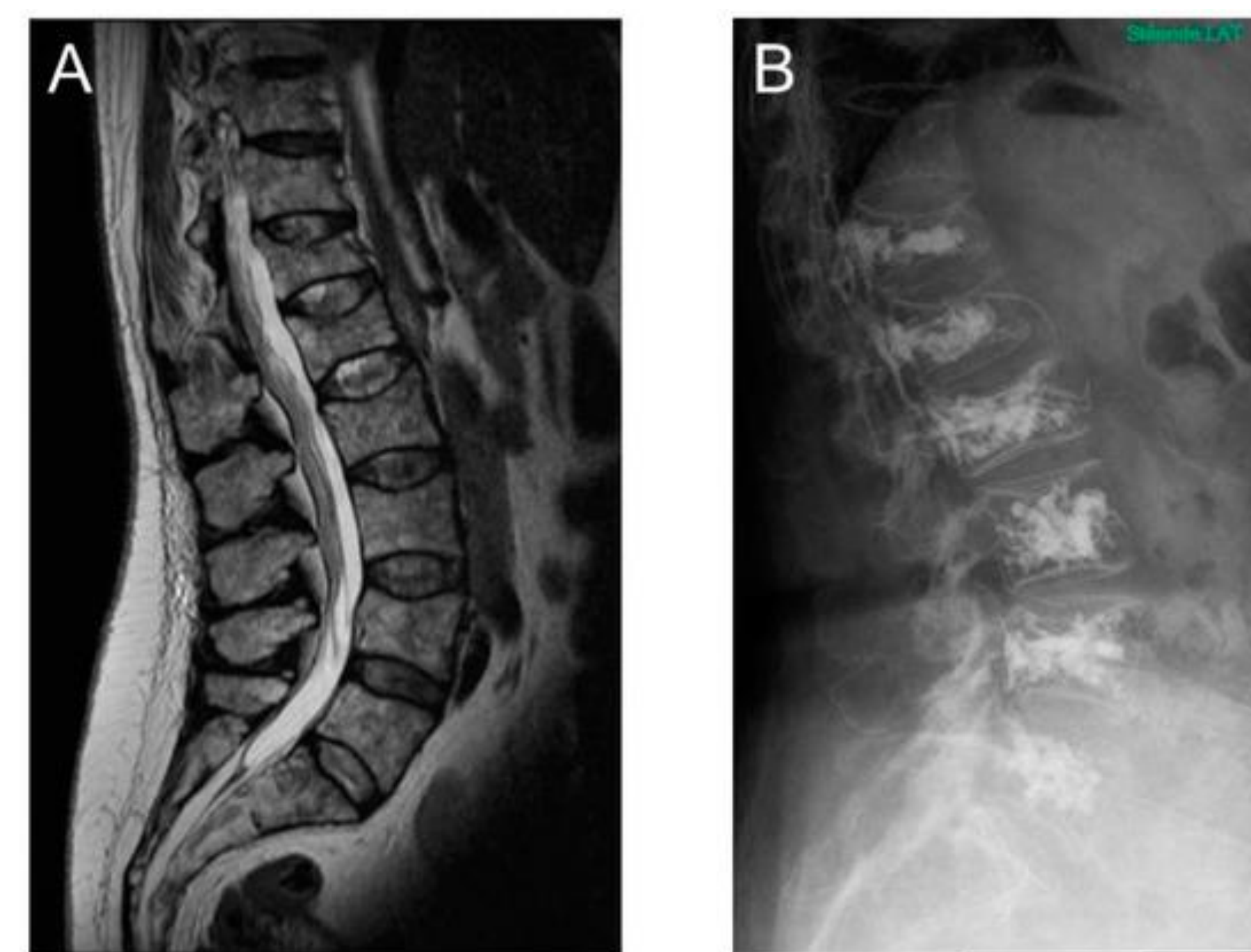
- A neoplastic disease of the B-cell origin
- Second most hematological malignancy in the USA
- A large percentage of the patient population includes elderly patients, average age of 70
- Most commonly involved areas include; vertebrae, skull, long bones, pelvis, and hips



Imaging of a MM patient indicating multiple fractures (Herbert, 2020, para 5)

Advantages of BKP

- Lower mortality and overall lower morbidity statistics versus patients who underwent conservative treatment
- Quicker, better return to daily living and normal functions versus other treatment protocols
- Less invasive procedure for patients who cannot tolerate surgery or other protocols
- Increase in patient satisfaction and feeling of a 'normal life;' decreased feeling of pain
- MM cannot be cured, however, BKP can prevent future neurological issues from occurring



MRI pre-procedure of compression fractures, and post-op x-ray from BKP (Rasch, 2020, para 37)

Disadvantages of BKP

- If not done in a timely manner, increased risk of adjacent vertebral fractures
- Possibility of not being a candidate for the procedure (MM is advanced, patient history, or increased risk of infection)

The significance of BKP and how the radiologist's role contributes

- Procedure can be lengthy. Anesthesia is used for pain management and makes it more comfortable for patient
- Radiologist must make special movements and use specific tools in order to properly treat the fracture
- Representatives from medical companies are often present in room to ensure the radiologist is using the tools properly and there is no cement leakage
- Radiologist must ensure patient history is suitable for procedure, along with disease duration, significance of disease, lab tests, and prior imaging to procedure
- Pre and post op care is critical for patients who undergo BKP

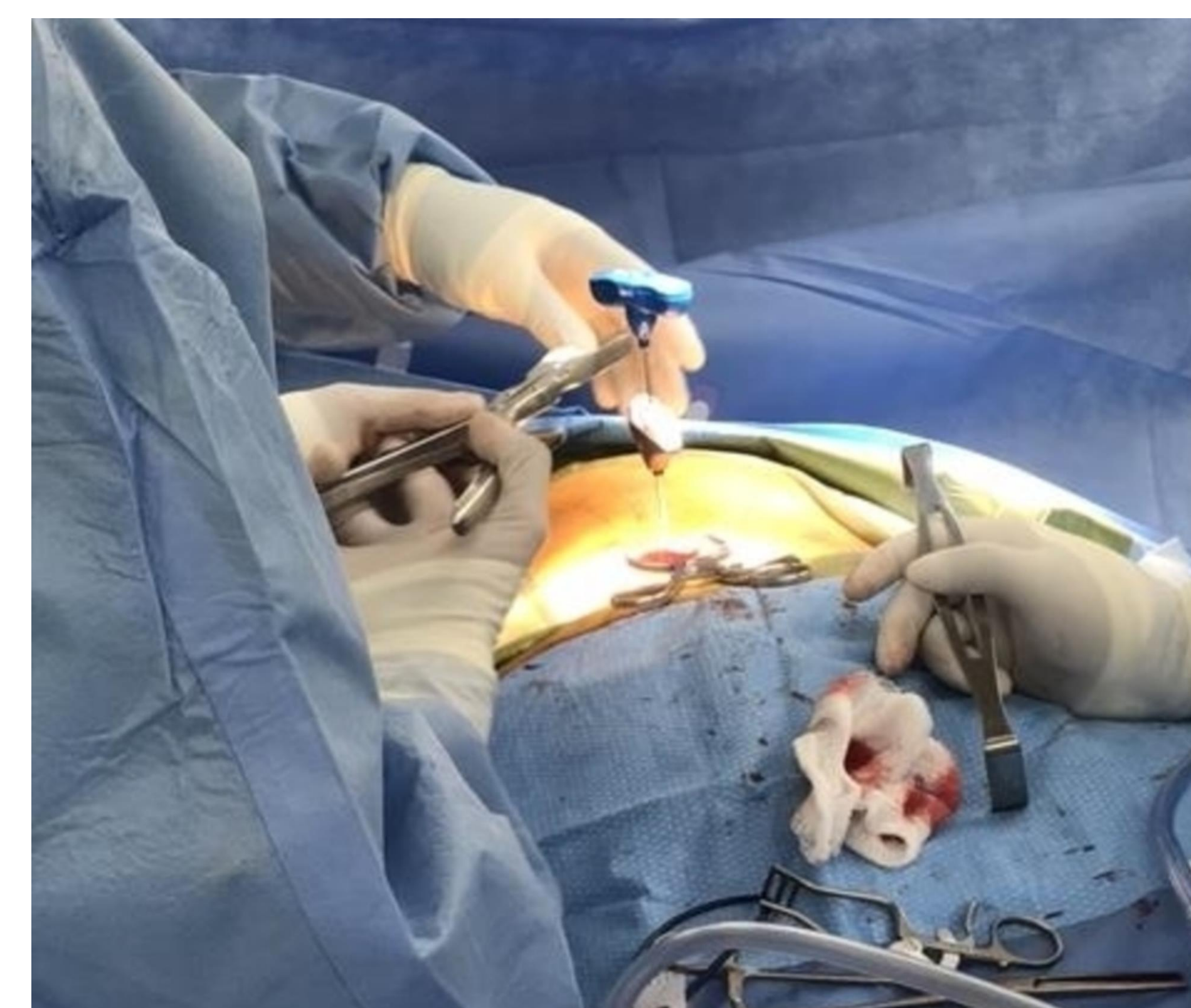
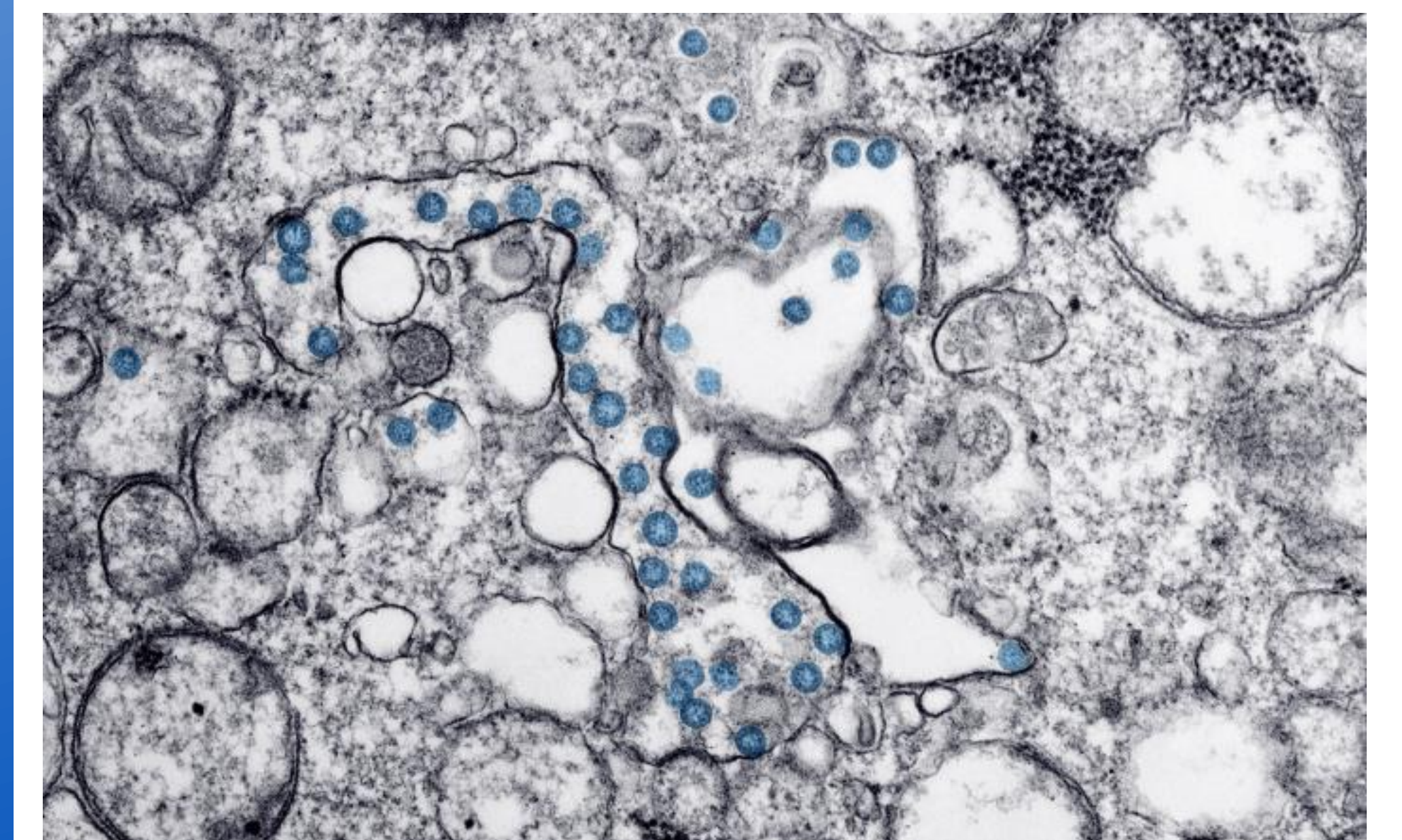


Image of radiologist preparing to insert cement into the spine during BKP (Shah, 2019, para 9).

How are patients affected in today's COVID-19 pandemic?

- Studies are not seen as a priority
- Increased risk of infection; potential of having COVID before procedure or getting COVID after procedure
- Patient history, symptoms, and severity of case are all accounted for



Microscopic image of COVID-19 (CDC, 2019, para 1)

Conclusion

- The advantages outweigh the disadvantages
- Increased quality of life
- Less invasive and a quicker recovery time
- Multiple Myeloma effects many and can be fatal if not treated properly
- Radiology is a critical, front-line step in the diagnosis of disease
- Proper education, medical teams, medical equipment, and patient care are all critical for a patient diagnosed and suffering from Multiple Myeloma