with a felon, actually a felon gone bad. Although it’s in an obscure journal, it’s an illustrative case. The authors state that a felon is generally thought to be secondary to direct inoculation of a fingertip, with a subsequent closed space abscess of the distal pulp of a digit. (Note: We now know that penetrating trauma is not always a prerequisite, and the anatomy of the fat pad allows for spontaneous invasion from the skin.) The offending organism is usually *Staphylococcus aureus* (always consider MRSA), and recognized complications include skin loss, osteomyelitis, septic arthritis, and flexor tenosynovitis. Therapy includes I&D of advanced infections and antibiotics.

In this article, a 51-year-old man had a one-month history of progressive pain and swelling in his distal right thumb. The symptoms started in the fat pad, with a seemingly insidious onset without penetrating trauma. Eventually, the patient could not stand the pain, and sought medical care. Initial attempts to aspirate or drain the thumb were unsuccessful. The patient’s immunologic status was compromised by diabetes, tobacco use, alcoholism, and intravenous drug abuse.

**Part 3 in a Series**

**The Natural History of a Neglected Felon**

Watson PA, Jebson PJ

*Iowa Orthop J*

1996, 16:164

This is one of the few articles I could find that actually detailed the clinical course of a patient with a felon, actually a felon gone bad. Although it’s in an obscure journal, it’s an illustrative case. The authors state that a felon is generally thought to be secondary to direct inoculation of a fingertip, with a subsequent closed space abscess of the distal pulp of a digit. (Note: We now know that penetrating trauma is not always a prerequisite, and the anatomy of the fat pad allows for spontaneous invasion from the skin.) The offending organism is usually *Staphylococcus aureus* (always consider MRSA), and recognized complications include skin loss, osteomyelitis, septic arthritis, and flexor tenosynovitis. Therapy includes I&D of advanced infections and antibiotics.

In this article, a 51-year-old man had a one-month history of progressive pain and swelling in his distal right thumb. The symptoms started in the fat pad, with a seemingly insidious onset without penetrating trauma. Eventually, the patient could not stand the pain, and sought medical care. Initial attempts to aspirate or drain the thumb were unsuccessful. The patient’s immunologic status was compromised by diabetes, tobacco use, alcoholism, and intravenous drug abuse.
About a month after onset, the volar surface of the entire thumb, from the tip to the MCP crease, was exquisitely tender to touch. Passive extension of the IP joint was painful. There was no fever, lymphangitis, regional adenopathy, or swelling of the dorsum of the hand. A radiograph demonstrated osteopenia consistent with early osteomyelitis of the distal phalanx. The WBC count was elevated at 14.8 cell/mm³. The patient was admitted to the hospital with a diagnosis of osteomyelitis and suppurative tenosynovitis. Emergency incision and drainage was started, and fluid and necrotic material filled the pulp space. Infection of the bone was clinically obvious. The flexor tendon insertion to the distal phalanx was destroyed and ruptured proximally. Intravenous antibiotics (ampicillin/sulbactam) were initiated. Culture revealed a polymicrobial infection, including *S. aureus*, *Enterobacter*, and *Klebsiella*. The antibiotic regimen was changed to reflect sensitivities. Although the wound was left open, the infection remained unabated, and eventually required amputation of the thumb at the MCP joint. The authors note that the natural history of this untreated and neglected felon mirrors other reports in the literature. (J Bone Joint Surg 1949;31-b:499, Am J Surg 1975;130[2]:194, Hand Clinics 1989; 5[4]:515.) From a pathophysiological standpoint, the intense tissue pressure in the pulp space increases vascular congestion, producing ischemia of the adjacent structures, essentially a compartment syndrome. Septic joints and flexor tendon infections are occasionally seen. Rupture of the flexor tendon is an unusual aspect of this case, and was related to erosion of the tendon insertion from the infection. The patient’s immunosuppressed state clearly added to the morbidity.

**Comment:** A felon is one of the most challenging hand infections presenting to emergency physicians. While a paronychia can be handled in your sleep, the cognition and skill required to successfully navigate the waters of an infected pulp space of the finger can be daunting. Even sagacious EPs will eschew involvement in such cases because of the high rate of complications, slow healing, copious follow-up cumbersome, and significant morbidity when full function of the thumb is compromised. Of course, a felon can affect any fat pad, but the thumb appears to have a special propensity to respond. The lack of fever, lymphangitis, and adenopathy are common but contrary to a common-sense evaluation of the distal extremity infection. A felon is indeed a slow-growing infection. A felon is indeed a slow-growing process that can be mistakenly labeled as benign, or it can lack clinical aggression. The initial attempt at draining this felon was a failure, but that’s not uncommon. In the early stages, this is not actually a full-blown abscess, but a soft tissue infection that may fail to yield copious pus. Many an unwary clinician has incised a fat pad only to find gross pus evasive. I myself have cut a few fingertips expecting pus, and found nothing. It takes chutzpah, if not hubris or impudence, for an EP to incise a thumb, but this is definitive therapy. It’s enigmatic when exactly a true abscess materializes; it’s almost a choice between incising too early or too late. The lack of fever, lymphangitis, and adenopathy are common but contrary to a common-sense evaluation of the distal extremity infection.

Importantly, and of diagnostic and prognostic significance, the swelling of a classic felon does not extend proximal to the IP/DIP crease unless suppurative tenosynovitis, a huge problem, exists. Proximal swelling prognosticates certain surgery, a prolonged course, and a poor outcome.

While methicillin-sensitive *S. aureus* (MSSA) was the most common infectious organism, MSSA now dominates the flora spectrum. Any surgically drained hand infection should be cultured. The garden-variety cutaneous abscess, even a paronychia, does not always mandate a culture in the ED, but felon is a special breed. With

Continued on next page
incidence increased each year by an
1997 to 2007, and discovered that
treated in the operating room from
MRSA infections with regularity. These
now harbor community-acquired
the past decade. Hand infections
in bacteriology of hand infections over
his dominant-hand thumb.

apy. Despite the best efforts of these
draining pus and expecting a patient
don't be lulled into complacency by
obviously needed hospitalization, and
follow-up is required. This patient
considered standard, although close
for the early felon are generally
radiographs.

metal by inspection and by
searches diligently for glass, wood, or
instigate a felon, and certainly one's
bacteria. Although foreign bodies may
infect, and provides a portal of entry for
to the fat pad, makes drainage diffi-
cult, and provides a portal of entry for
Although foreign bodies may
infect, and provides a portal of entry for
Parentheti-
cally, it's prudent to routinely obtain

Oral antibiotics in lieu of surgery
for the early felon are generally
considered standard, although close
follow-up is required. This patient
obviously needed hospitalization, and
don’t be lulled into complacency by
draining pus and expecting a patient
to be compliant with outpatient ther-
apy. Despite the best efforts of these
clinicians, the patient ultimately lost
his dominant-hand thumb.

Community-Acquired
Methicillin-Resistant
Staphylococcus aureus in
Surgically Treated Hand
Infections
Imahara SD, Friedrich JB
J Hand Surg Am
2010;35(1):97

This article emphasizes the change
in bacteriology of hand infections over
the past decade. Hand infections
now harbor community-acquired
MRSA infections with regularity. These
authors reviewed 150 hand infections
in the operating room from 1997 to 2007, and discovered that
48 (30%) harbored CA-MRSA. The
incidence increased each year by an
amazing 41 percent per year. Intra-
venous drug use and felon as the
type of infection were risk factors for
CA-MRSA.

All patients were treated at the
University of Washington in Seattle,
and the demographics of the patient
population require specific comment. Almost 40 percent of the MRSA-
infected patients were homeless; 10
percent were inmates at a local
jail; and eight percent had HIV
infections. An amazing 54 percent
were intravenous drug users. The
infections most commonly seen were
tenosynovitis and undifferentiated
abscess, but about six percent were
felons. The thumb accounted for
13 percent of all infections and 17
percent of MRSA cases. Only about
30 percent of the overall infections
had methicillin-sensitive S. aureus as
the culprit. Bizarrely, 17 percent of
cases yielded Neisseria gonorrhoea
(gonococccemia)?

Comment: This article is a reflection
of what every EP knows: MRSA is ram-
 pant, and it targets our ED population.
This patient profile describes denizens
of what every EP knows: MRSA is ram-
pant, and it targets our ED population.

One should not expect a homeless
schizophrenic with HIV who is in and
out of jail to be the ideal patient.
Few hand surgeons will make a house
that is overexpressed by a bridge,
but hospitalization is required merely
because of the insurmountable
microbiological issues. This popula-
tion cannot afford expensive
antibiotics, frequently don’t under-
stand how to take them, and do not
appreciate the need for or cannot
orchestrate follow-up or continuing care.
While the Wall Street crowd might fare
well as an outpatient, hospitalization
and intravenous antibiotics are often
the norm rather than the exception for
an otherwise drainable infection in our
patients.

FELONS
Continued from previous page

Treatment of Felons
Kilgo, ES, Brown LG, et al
Am J Surg
1976;130(2):194

This frequently referenced 1975 article
discusses a variety of surgical
approaches to drain a felon. The
authors from San Francisco General
Hospital are well known hand
surgeons who proselytize that a longi-
tudinal incision in the midline of the fat
pad is the most effective surgical
approach for a felon. It’s not a formal
study but an opinion with clinical
examples. The authors say this
approach reduces serious iatrogenic
complications secondary to incisions,
such as skin slough, permanent anes-
thesia, and unstable fat pad, persistent
pain, and unsightly scars. The more
traditionally used lateral incision is
associated with neurovascular injuries
because of the anatomy of the sensitive
nerves and arterial supply. Through-
and-through lateral incisions can cause
anesthesia of the entire tip of the digit.
More aggressive incision, such as the
fish-mouth or hockey-stick incision
can create an unstable fat pad by sev-
ering the stabilizing longitudinal septal
strands. The mid-volar longitudinal
incision of the fat pad, the area where
most abscesses point, is the preferred
incision of these authors.

The longitudinal volar fat pad inci-
sion is commonly thought to produce a
painful scar in a sensitive place, and has
been maligned by some and praised by
others. While experts usually agree that
an abscess should be drained where it
points, some favor the traditional high
lateral incision. This approach may be
preferred as the most effective and
safer approach by general clinicians.

Comment: From my review of the
literature, I have gleaned that there is
more than one acceptable way to drain a
felon. The volar fat pad approach
suggested in this paper was forbidden
by the hand surgeons where I trained,
but apparently is enthusiastically endorsed by the renowned hand surgeons who wrote this paper. Some reviewers did, however, recommend that the lateral approach also be considered as acceptable first-line therapy. I suspect that it doesn’t really matter as long as one does not fill the entire fingertip. Regardless of the surgical approach, avoid the flexor tendon sheath, neurovascular bundle, and the nail matrix.

Draining a felon is fair game for any talented EP, and standard for patients who won’t be readily treated by colleagues. Nonetheless, the pensive and conservative clinician who does not want to become involved in the treatment of a felon has much support by hand surgeons. The easiest task includes ED diagnosis, with the clinician realizing the seriousness of the infection, and facilitating the right environment for a cure. A few days will likely not make much of a difference, but good luck ushering my ED patients into the office of the downtown hand surgeon. The community orthopedic surgeon may deem this condition a true pariah for his office. It appears prudent to consider a liberal admission policy, intravenous antibiotics effective against MRSA, radiographs looking for foreign bodies and osteomyelitis, and splinting and elevation. Draining a felon is an individual decision, but it is certainly within the realm of emergency medicine. The compliant and savvy patient without osteomyelitis or flexor tenosynovitis can be treated as an outpatient, but for those who lack the ability, resources, or common sense to follow a lengthy outpatient regimen, admission for at least a few days is a good option.

I could find no universally accepted standard of care with regard to the finer points of felon infections. Probably the best take-home message is to respect a felon as a serious and hard-to-cure infection on a body part that should be 100 percent functional whenever possible. Felons cannot be taken lightly nor approached cavalierly. Although a prescription for antibiotics and a proximate follow-up visit is likely in order for many early felons, a more aggressive approach should be embraced when the cases are advanced, or patient compliance is less than perfect.

To earn CME credit, you must read the article in Emergency Medicine News, and complete the evaluation questions and quiz, answering at least 80 percent of the questions correctly. Mail the completed quiz with your check for $12 payable to Lippincott Continuing Medical Education Institute, Inc., Two Commerce Square, 2001 Market St., Third Fl., Philadelphia, PA 19103. Only the first entry will be considered for credit, and must be received by Lippincott Continuing Medical Education Institute by December 31, 2011.

December 2010 Questions:
1. All of the following are acceptable surgical incisions to drain a felon of the thumb except:
   - A. High lateral incision on the radial aspect of the fat pad.
   - B. Through-and-through high lateral incision of the fat pad.
   - C. Longitudinal incision in the middle of the fat pad, stopping distal to the IP crease.
   - D. Hockey-stick incision to fully expose the fat pad space.
2. The initial choice for empiric antibiotics for a felon should include coverage for:
   - A. MRSA.
   - B. Pseudomonas.
   - C. Fungal.
   - D. Oral flora.
3. Which of the following is associated with a poor outcome in a patient with a fully developed felon?
   - A. Copious pus is encountered and drained.
   - B. Immediate hospitalization is considered.
   - C. A foreign body is found upon incision.
   - D. The entire thumb to the palm is swollen.
4. The initial ED management of a felon should include all of the following except:
   - A. Obtain an x-ray.
   - B. Institute antibiotic therapy.
   - C. Obtain blood cultures, a CBC, and a sed rate for staging purposes.
   - D. Culture any pus obtained.
5. A patient presents with a minimally swollen and mildly tender distal thumb (fat pad) after being stuck with a toothpick five days before. Which is the most reasonable ED intervention?
   - A. MRI searching for a foreign body or osteomyelitis.
   - B. Incision and drainage via an aggressive lateral incision.
   - C. Oral antibiotics and follow-up in three days.
   - D. STAT consultation with a hand surgeon.

Directions
Your successful completion of this activity includes evaluating it. Please indicate your responses below filling in the blanks or by darkening the circles with a pencil or pen.

Select the best incision to drain a felon.

Plan the best empiric antibiotic choice for a felon.

Design an initial ED approach to a felon.

Please indicate how well the activity met your expectations: 1 (minimally) to 5 (completely)

Was effective in meeting the educational objectives

Content was useful and relevant to my practice

Please address the practical application of this activity below

How many of your patients may be affected by what you learned from this activity?

Did you perceive any bias for or against any commercial products or devices? Yes No

If yes, please explain:

Please complete these overall activity assessment questions.

Did you perceive any bias for or against any commercial products or devices?

If yes, please explain:

Compared with other educational activities in which you have participated over the past year, how would you rate this activity?

Future activities concerning this subject are necessary.

My biggest clinical challenges related to this topic are:

Please use the space below to provide any additional information that will help the activity planners and faculty evaluate this activity.

☐ Yes, I am interested in receiving more information on this topic and future CME activities from Lippincott CME Institute. I am willing to help evaluate the outcomes of this activity. (Please place a check mark in the box.)

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