(b)

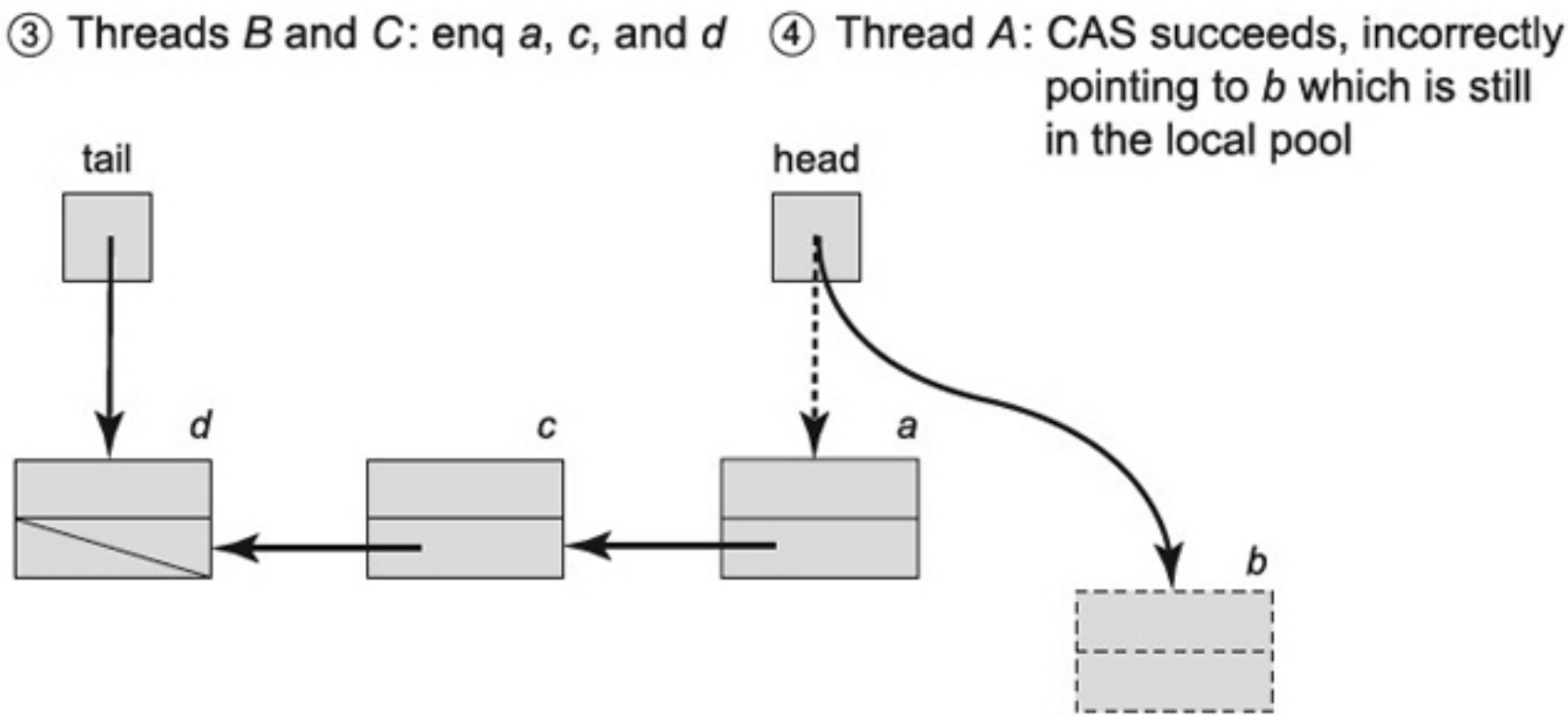

FIGURE 10.15B An ABA scenario: Assume that we use local pools of recycled nodes in our lock-free queue algorithm. In part (a), the dequeuer thread *A* observes that the sentinel node is *a*, and next node is *b*. (Step 1) It then prepares to update head by applying a compareAndSet() with old value *a* and new value *b*. (Step 2) Suppose, however, that before it takes another step, other threads dequeue *b*, then its successor, placing both *a* and *b* in the free pool. In part (b), (Step 3) node *a* is reused, and eventually reappears as the sentinel node in the queue. (Step 4) Thread *A* now wakes up, calls compareAndSet(), and succeeds in setting head to *b*, since the old value of head is indeed *a*. Now, head is incorrectly set to a recycled node.