If $4mn - m - n$ is a perfect square then $4mn - m - n = l^2$ for some positive integer $l$. This implies

$$(4m - 1)(4n - 1) = (2l)^2 + 1. \tag{1}$$

Since, $(4m - 1) \geq 3$ has to have a prime divisor $p$ of the form $4k + 3$, as if all the prime divisors of $4m - 1$ are of the form $4k + 1$ then $4m - 1$ has to be of the form $4k + 1$, which is not possible. Let $p$ be a prime divisor of $(4m - 1)$ of the form $4k + 3$, then from (1) we have, $(2l)^2 \equiv -1 \bmod p$ exponentiating both sides by $\frac{p-1}{2}$ we get

$$(2l)^{p-1} \equiv (-1)^{\frac{p-1}{2}} \bmod p. \tag{2}$$

The left hand side of (2) is congruent to 1 mod $p$ from Fermat's little Theorem, and as $p$ is of the form $4k+3$, $\frac{p-1}{2}$ is odd and the right hand side of (2) is $-1$ so (2) implies $1 \equiv -1 \bmod p$ or $p|2$ which is absurd as $p \geq 3$. Hence $4mn - m - n$ can never be a perfect square when $m$, $n$ are positive integers.