```
choose_unique  THM

⊢  ∀'a:Type, P:('a→Type), x:'a.
|  P(x) ⇒ (∀y:'a. P(y) ⇒ x = y) ⇒ (@y:'a. P(y)) = x
| by Unfold `choose` 0 THEN StrongAuto
|
1. 'a : Type
2. P : 'a→Type
3. x : 'a
4. P(x)
5. ∀y:'a. P(y) ⇒ x = y
⊢  InjCase(lem({y:'a| P(y) }); y. y, arb('a)) = x
| by GenDC (lem({y:'a| P(y) })) THEN StrongAuto
|
|\
| 1. 'a : Type
| 2. P : 'a→Type
| 3. x : 'a
| 4. P(x)
| 5. ∀y:'a. P(y) ⇒ x = y
| 6. x2 : {y:'a| P(y) }
| ⊢  x2 = x  by Analyze 6 THEN InstHyp [x2] 5 THEN StrongAuto
|
.\
. 1. 'a : Type
. 2. P : 'a→Type
. 3. x : 'a
. 4. P(x)
. 5. ∀y:'a. P(y) ⇒ x = y
. 6. {y:'a| P(y) }→Void
. ⊢  arb('a) = x  by Analyze 6 THEN StrongAuto
. |
. .....antecedent .....
. 1. 'a : Type
. 2. P : 'a→Type
. 3. x : 'a
. 4. P(x)
. 5. ∀y:'a. P(y) ⇒ x = y
. 6. {y:'a| P(y) }→Void
. ⊢  {y:'a| P(y) }  by DTerm x 0 THEN StrongAuto
END
```